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J&L INTEGRAL-JOINT DRILL PIPE

- **ALLOY STEEL THROUGHOUT FULL PIPE LENGTH**
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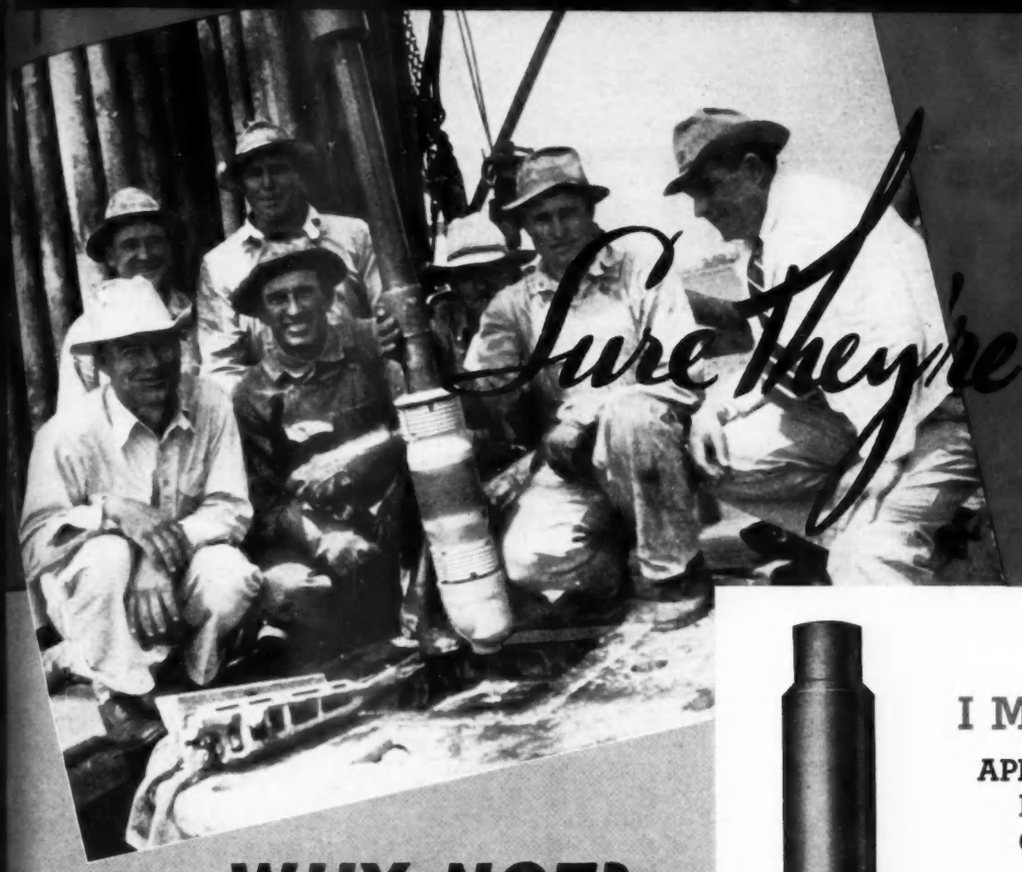

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These operators know from past experience that when this Baker Model "K" Cement Retainer is run to the desired setting point and packed off by hydraulic pressure it will "stay put"; that fluid can be put away under any pressures that can safely be applied to the casing in which the Retainer is set; that fluid can be bled off at any time during circulating or cementing operations (by-passing through the Baker Circulation Joint); that when the last of the cement or fluid has been placed and the "squeeze" applied, the Ball Back-Pressure Valve in the lower end of the Baker Model "K" Cement Retainer will function automatically and positively to prevent any return flow back through the Retainer; that, following the cementing operation, the running-in string (tubing or drill pipe) can be easily unscrewed from the Cement Retainer and removed from the hole; that when it is time to remove the Cement Retainer, it can be drilled up with minimum time and expense.

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is dollars

plus **TIME**

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For true value — right prices, plus time and place — call the

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LOOKING AHEAD

WITH THE EDITOR

DESIRE TO GET the rotary rig busy on another location without delay in the rush of development in Illinois has resulted in adoption of shooting to remove the windows or sections placed in the casing to permit production from multiple sands. The shot has been found effective both for knocking out the soft sections and for conditioning the hole as in ordinary shooting practice. Early practice was to remove one type of drillable material from the casing string with acid and another by drilling. Acid removal involved running tubing with a machine, but the removal by drilling process involved again setting up the rotary equipment when the window was to be opened. The latter process still is practiced, but many operators prefer to do it more quickly. The first step toward speed was use of a smaller-diameter section of the drillable material and drill out with cable tools.

The fact that most Illinois areas produce best after a nitro shot suggested the idea of making a shot do double duty, but an inhibition was the experience of shots in steel casing: it was thought that shooting would splinter the drillable material so that it could not be removed. The contrary has been found true.

An article to appear next week follows in detail the progress of overcoming the several problems involved, and reviews three methods that have been put into general practice. These details include description of equipment and materials, and costs.

WHEN THE OIL BUSINESS invades a domain that for centuries has been that of the Cajun, the alligator, the muskrat, and the tupelo gum, some picturesque scenes are bound to be the result. We are not suggesting that the swamps of Southern Louisiana are a frontier in petroleum production. Operations down there are generally too successful, and have been so for too long a time to be identified with the thankless existence of the pioneer. We do say, though, that behind the quiet mask of the dismal swampland, oil operators are overcoming difficulties of which the inland operator has never dreamed.

An early issue of THE OIL WEEKLY will carry a pictorial feature on living and working conditions on a typical marshland location in the Bayou Little Pigeon area, "where the taxi-cabs they row-out, and you drown if there's a blow-out." Theme of this pictorial presentation is the manner in which companies and drilling contractors have solved the problem of inaccessible locations by fitting out the drilling barge as a floating hotel, with comfortable accommodations for the drilling crew. It is no Savoy-Plaza, but we believe you will agree that its better than six hours of boat riding each day to get to and from work. Watch for this feature—it will be some solace the next time you lose a few days because of a muddy location.

The OIL WEEKLY, published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

THE OIL WEEKLY

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The Oil Man's Calendar

FEB.	
17-20	American Institute of Mining & Metallurgical Engineers, New York.
24-25	Liquefied Petroleum Gas Association, Chicago.
27-28	American Petroleum Institute, Division of Production, Southwestern District, Shreveport.
MAR.	
1	North Texas Oil & Gas Association, Wichita Falls.
11	American Petroleum Institute, Division of Production, Spring Meeting, Pacific Coast District, Los Angeles.
APR.	
1- 3	Society of Exploration Geophysicists Houston.
2- 4	American Association of Petroleum Geologists, Twenty-sixth Annual Meeting, Houston.
3- 4	Society of Economic Paleontologists and Mineralogists, Houston.
7-11	American Chemical Society, St. Louis.
15-17	Southwest Gas Measurement Short Course, University of Oklahoma, Norman.
16-18	Western Petroleum Refiners Association, Hot Springs, Ark.
17-18	American Petroleum Institute, Division of Production, Eastern District, Pittsburgh.
23-25	Petroleum Industry Electrical Association, Tulsa.
23-25	Natural Gasoline Association of America, Dallas.
24-25	National Petroleum Association, Semi-Annual Meeting, Cleveland.
MAY	
2- 3	Petroleum and Natural Gas Conference, State College, Pa.

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Why the Mission Split-Rubber Principle Permits Faster Swabbing With Safety . .

Exceptionally large fluid passage, made possible by the split-rubber principle, results in a faster falling swab.

Heavy Duty Rubbers and solid swab mandrel lift heavier loads without trouble.

Simple, Rugged Construction: no valve — solid mandrels—coarse threads—long life rubbers. These features of the Mission Swab reduce maintenance costs.

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Try the Mission Valveless Swab on your next swabbing job. Find out how much faster it makes round trips. Notice how much more fluid it lifts. See how durable the rubbers are. In short, discover how much it reduces swabbing costs. Mission Manufacturing Company, Humble Road, Houston, Tex. Export office, 30 Rockefeller Plaza, New York.

You Can Swab Faster and Safer with

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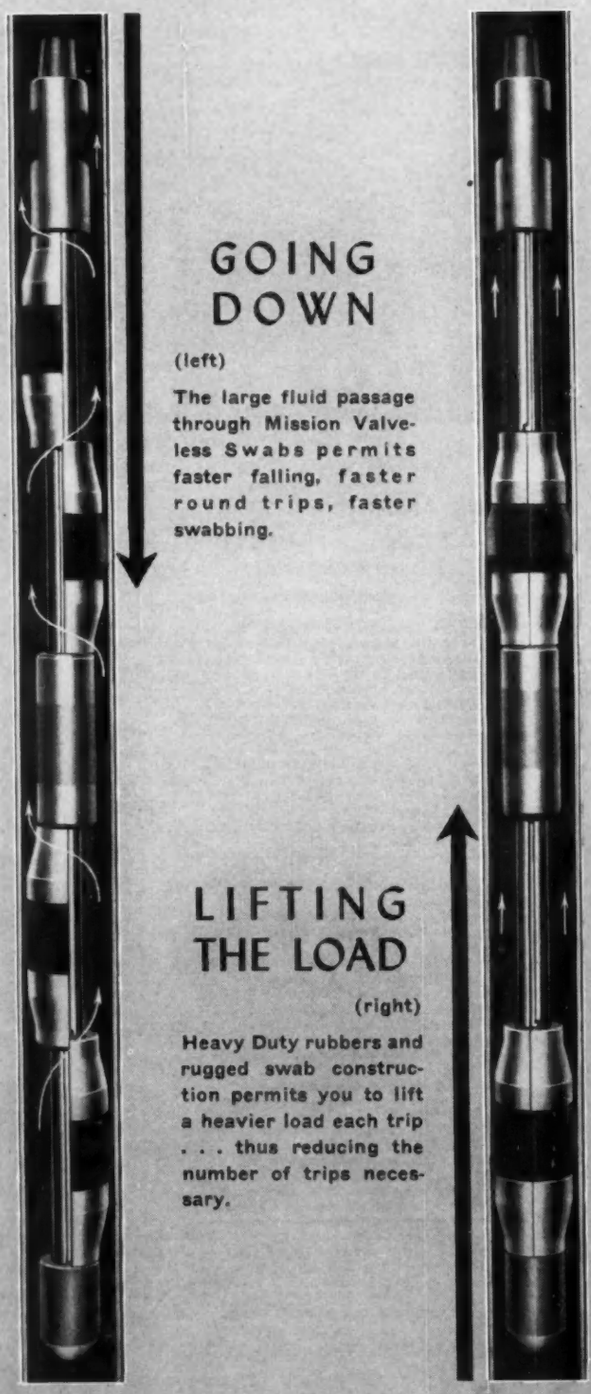
VALVELESS SWABS



GOING DOWN

(left)

The large fluid passage through Mission Valveless Swabs permits faster falling, faster round trips, faster swabbing.

LIFTING THE LOAD

(right)

Heavy Duty rubbers and rugged swab construction permits you to lift a heavier load each trip . . . thus reducing the number of trips necessary.

THE OIL WEEKLY

FEBRUARY 17, 1941

VOLUME 100 NUMBER 11

The Changing Panorama

Trust Suit Settlement . . .

Defendants, 22 major oil companies and the American Petroleum Institute, in the pending anti-trust suit filed in the District of Columbia, are understood to be discussing a consent decree with government counsel. While negotiations are reported to have been going on for sometime, the complex character of the problems involved probably will necessitate several months before a satisfactory decree can be worked out. In the meantime, it is to be supposed that the Department of Justice will go ahead with preparations for the suit. However, it is unlikely that it will go to trial while an effort is being made toward a settlement.

Tanker Rates Down Sharply . .

Despite the large decline of recent weeks, rates for chartering clean tankers in coastwise movement may go still lower, in the opinion of some qualified observers.

In the absence of firm demand for tonnage to lift cargoes between now and March 1, rates for clean boats in the Gulf-to-North-of-Hatteras trade were down at the middle of the past week to 38 cents a barrel for gasoline, 40 cents for kerosene, and 42 cents for No. 2 fuel.

Even lower prices were bid, but owners refused them, despite the fact that several tankers were said to be available for service.

Largely responsible for the lagging of demand for clean boats, apparently, are the comparatively large stocks of heating oil at North Atlantic ports; the inventories having expanded around the holidays, when the weather was relatively mild, while shipments up the coast were exceptionally heavy.

The domestic tanker chartering rates reached peak levels late in 1940, when gasoline was moved at 70 cents a barrel, kerosene at 75 cents, and heating oil at 80 cents. The current decline began soon after the middle of January, and the present rates are not much more than half of the peak rates.

In line with the trend of rates for clean boats, and in the face of strong demand for heavy fuel oils along the Atlantic Coast, the rates for chartering dirty tankers also have declined, a fixture having been made recently at 46 cents a barrel for 30-gravity or lighter crude; whereas the previously prevailing rates were 59 cents for 30-gravity or lighter crude and 66 cents for 10-20-gravity fuel oil.

Catalytic Cracking . . .

Last week the fluid catalytic cracking process, product of the laboratories of Standard Oil Development Company, was unveiled in offices of Standard Oil Company of New Jersey as a preview for the press. What the newspaper men saw was a "whitish powder," which went into the crude charge, only to become a fluid during the regenerative stage.

It is designated a "fluid catalyst." Claims are that there will be no down time for revivication of catalyst and the burning of carbon from the cases. The catalyst does its work, goes through regeneration and goes back to work as a catalyst.

Higher recovery in gasoline and no lost time had brought the process to the point that three installations are to be made, at Bayonne, at Baton Rouge for Standard Oil Company of Louisiana and at Baytown by Humble Oil & Refining Company.

Also it is a process whose patents are owned in the United States, where it will be licensed to other oil companies.

Texas State Leases . . .

Texas has a law under which the state land commissioner leases certain state-owned lands for oil development for a term of 25 years. The oil conservation commission has authority to limit the daily production from these lands in common with privately-owned properties. The circumstance that one department of the state proposes to rush production by limiting time, while another and equally potent department insists that recovery be retarded, has caused some protest and criticism. Some of the lands so leased have been found productive, and it is contended that even if proration authorities did not limit the flow, the term of the lease would not be sufficient to recover all the oil. Even the fact that leasing is by competitive bidding and that the buyer had full knowledge of what he was buying, does not allay the cirticism: it is contended that the state should lease on a commercial basis. The only relief apparently is for the legislature to amend the leasing law and extend the time of producing leases. This the current legislature does not seem inclined to do, partly because of unfriendliness toward "vested" interests in general. A more apparent injustice has been perpetrated by the same legislature, in leasing certain coast lands to the federal government for bombing ranges for the Army and Navy. Part of the lands are under lease for oil development, and it is provided that these leases shall be extended beyond their 25-year term a period equal to the time development is prevented by military occupation. But the annual lease rental must continue to be paid, and the bonus money paid when the leases were awarded remains in the state treasury.

MARINE-TYPE diesels, straight-through operation of line scrapers, and batch handling of widely dissimilar crudes highlight East Texas' latest crude carrier. Designed to handle a daily throughput of 60,000 barrels, the line incorporates latest pipe line design and practice. Construction, seriously hampered by 60-day continuous floods at river crossings, set records in overcoming obstacles, and enabled 12-inch line to begin crude handling with only one month of lost time. Twin units in all stations permit continued flow at lessen rate during overhaul periods and provide two-stage pressure during normal operation.

By ELTON STERRETT
Equipment Editor

STRAIGHT-LINE FLOW *Features* *Pan American's* MODERN LINE

DESIGN and construction of Pan American Pipe Line Company's new crude oil carrier linking the East Texas field with Texas City and the Gulf bring a vast network of lines up to date with a 10- and 12-inch trunk line which can handle a daily throughput of 60,0000 barrels.

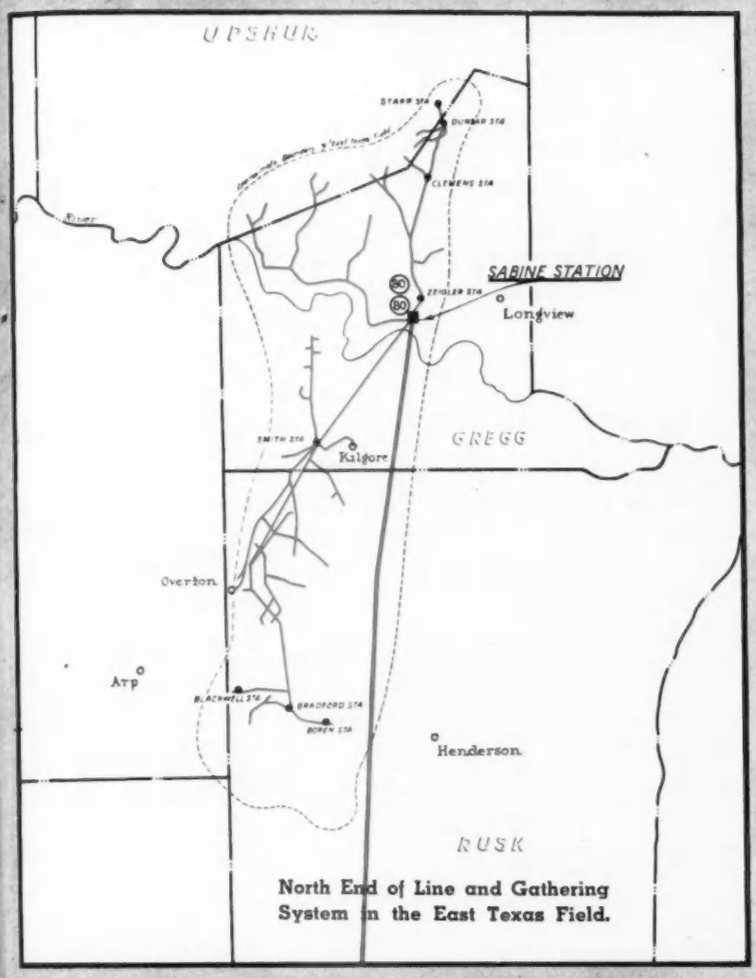
Modern, marine-type diesels, powering three-stage centrifugal pumps, are arranged in pairs in each station, with the pumps in series on the line with suitable checks and block valves to permit either to work alone, or for both to be operated as two multiple-stage units, the first raising the pressure from suction line to 350 pounds psi, and the second taking its suction from the first discharge line, and imposing the working pressure of 700 pounds on the fluid.

The two 400-horsepower, six-cylinder diesels in each station are equipped to operate on fuel drawn from the line, the East Texas crude being centrifuged and stored against daily demands in tankage at each station site. Additional provision for continuous operation at each of the stations below the end-of-line unit includes the mounting of a tank for the storage of standard diesel fuel oil—this being arranged to insure adequate fuel stocks in case the line is operating on Cayuga or other crude not so well suited to diesel use as is the light East Texas crude.

The diesels operate at a speed of just under 300 rpm, a herring-bone-gear speed increaser being interposed between each diesel and its pump with a step-up ratio of 10,345 :1 to provide the rated pump speed of 3000 rpm. A coil-spring flexible coupling, with high shock-absorbing ability, absorbs any pulsations tending to originate in the diesel and transmits uniform power to the big gear of the speed increaser. A second universal joint, of the ring-and-spur gear type, is set between increaser and centrifugal pump shaft to care for any misalignment which may occur through expansion or vibration.

In the construction of the stations on the line, soil conditions necessitated the excavation of deep pits extending out beyond the limits of both engine bases, a solid mat or slab of concrete being poured in this pit to provide ade-

[*Continued on Page 16*]



North End of Line and Gathering System in the East Texas Field.

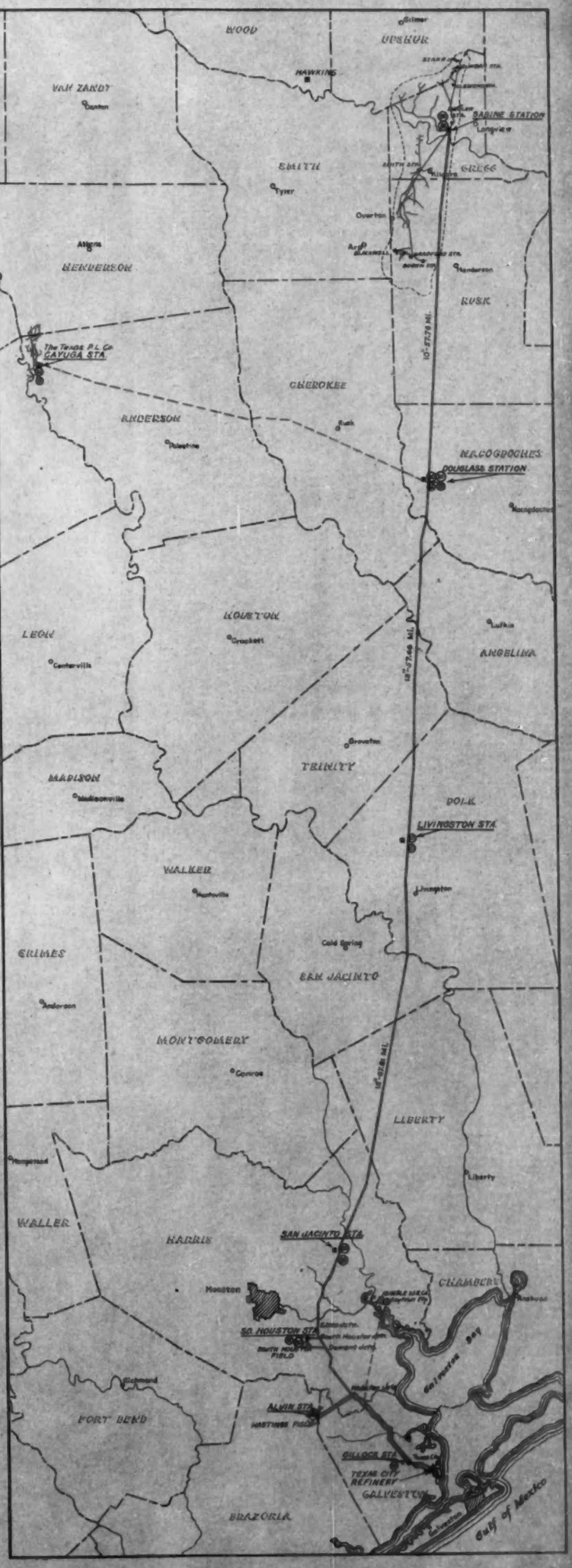
PAN AMERICAN PIPE LINE COMPANY
East Texas — Texas City Line

LEGEND

——— *Oil Pipe Lines*

– – – *Oil Pipe Lines (Foreign)*

South End of Line, Showing Details in Houston - Texas City Area.



Pan American's

MODERN TRUNK LINE IN PICTURES

Construction Problems

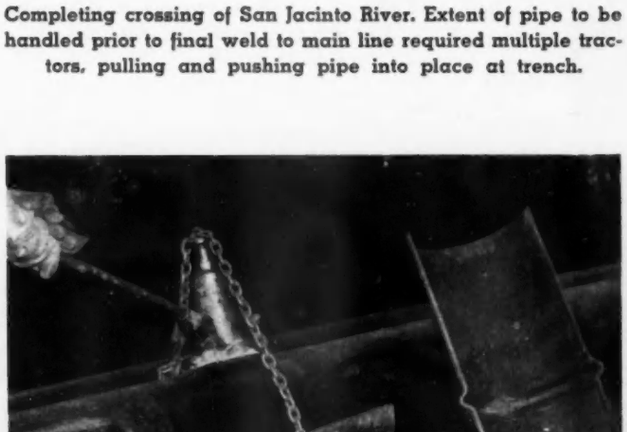
Bull-plugged end of twelve-inch river crossing pipe (left), as it emerges from the flooded waters of the Trinity River—which stayed out of its banks for 61 consecutive days during construction of the line.

Three sections of Trinity River crossing (below) ready for dragging and make-up as each section is pulled into river. Extreme width of stream made sectional handling of pipe necessary.

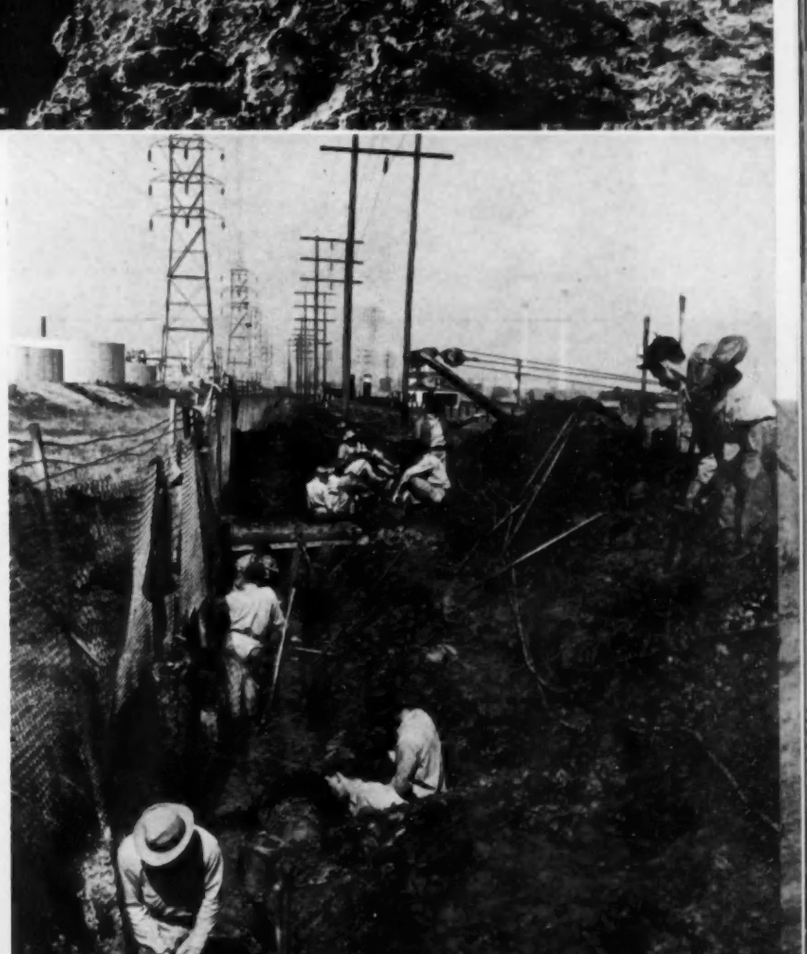
Because of heavy drags imposed by widened streams while in flood stage, crossings were made by doubled lines and snatch block on end of pipe being dragged.

Photos by C. G. Harrison

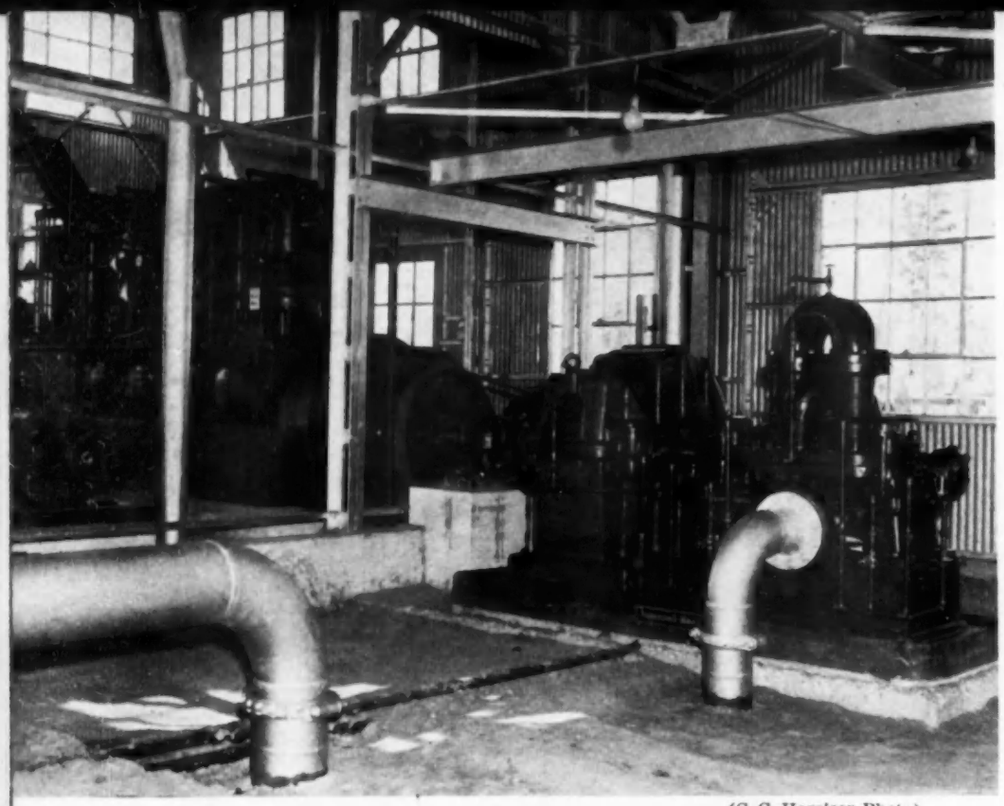
Completing crossing of San Jacinto River. Extent of pipe to be handled prior to final weld to main line required multiple tractors, pulling and pushing pipe into place at trench.



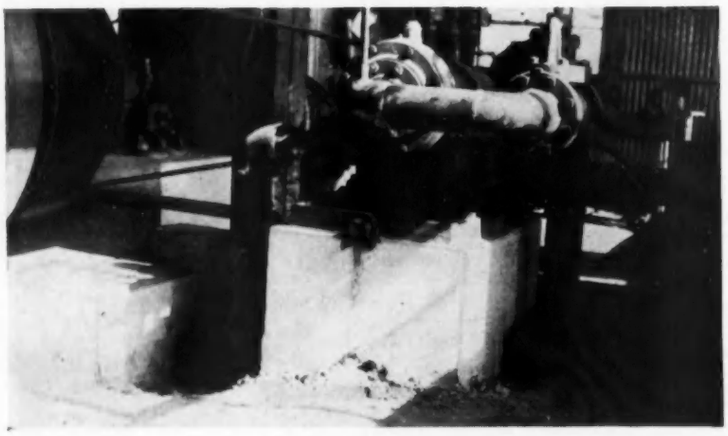
Chain, tightened by hydraulic jack, holds half of river crossing sleeve against line pipe preparatory to tack-welding.



Tying in the new line to the old main at the edge of the Sinclair Refining Company plant, a mile below Sinco Junction. Mud is characteristic of entire construction job.



(C. G. Harrison Photo)



Pan American Line

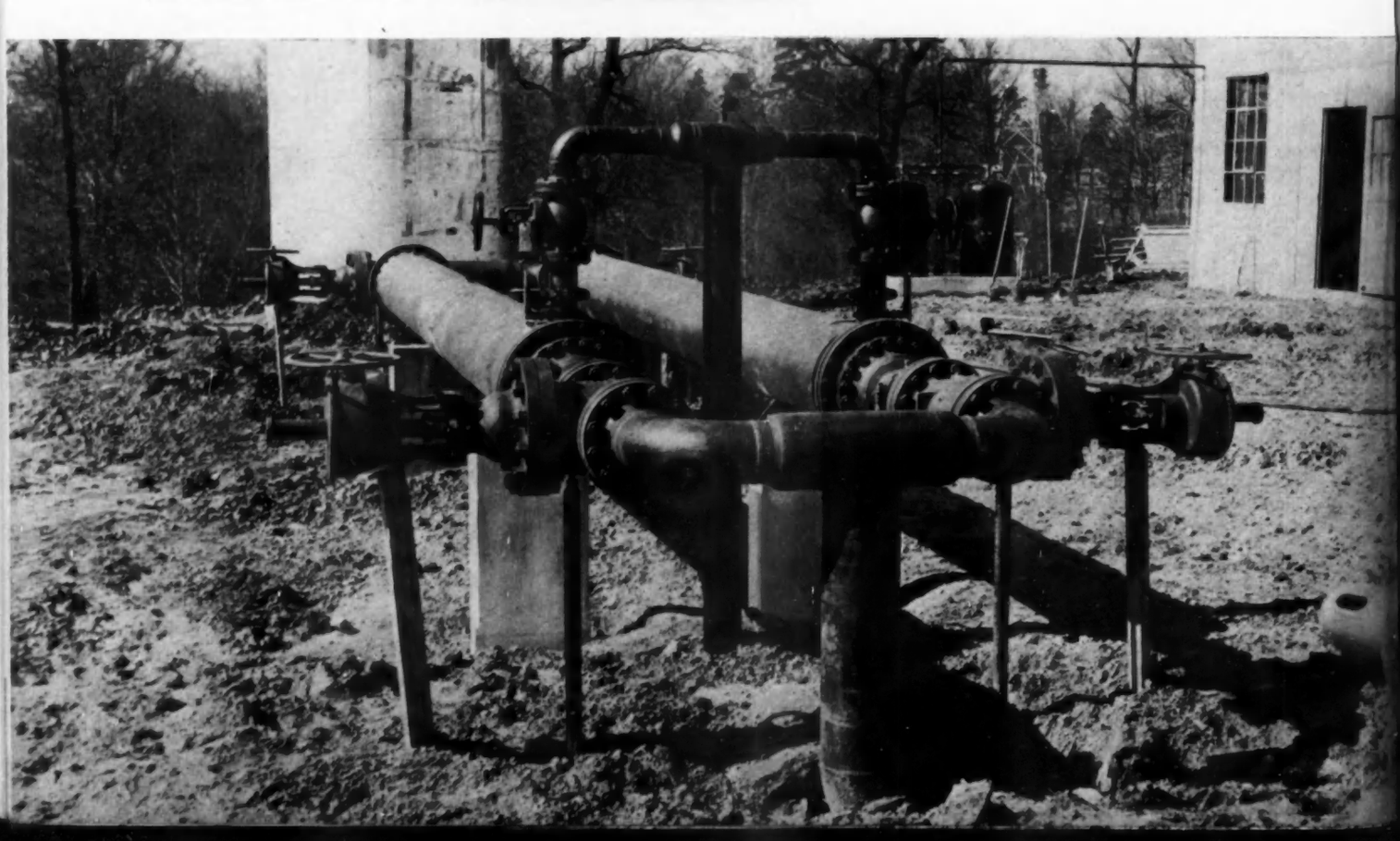
(Continued)

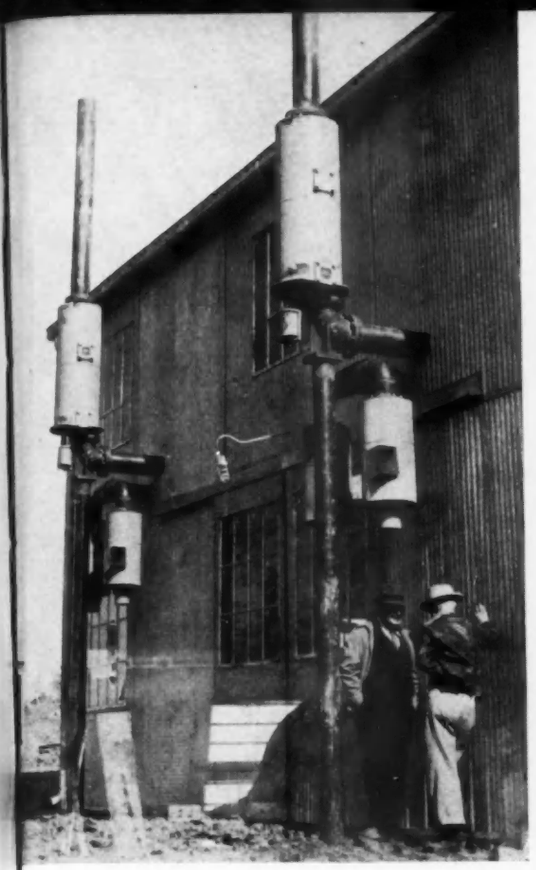
Station Design and Operation

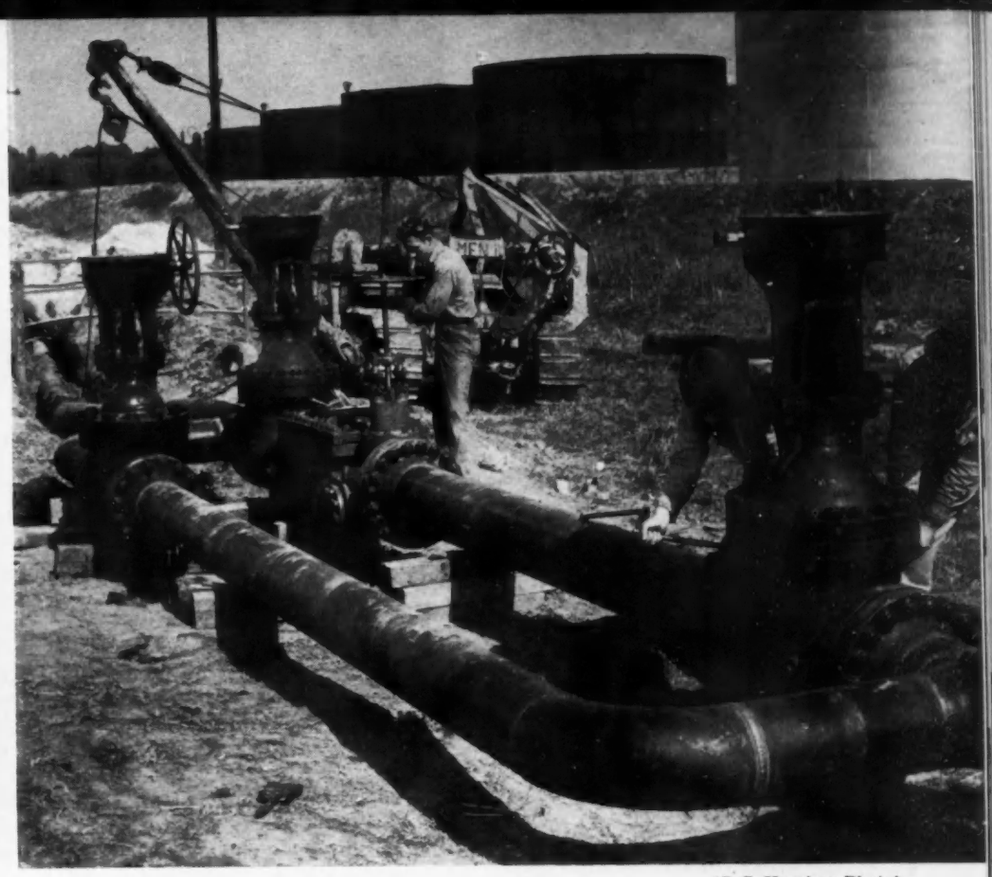
One unit of Sabine station, consisting of six-cylinder diesel, speed increaser and three-stage centrifugal pump. Flexible couplings separate units and absorb shock and vibration. Lighting unit, with selective vee-belt drive, is located between diesel units.

Cooling water is pumped over the diesels by individual, belt-driven centrifugal pumps (left), mounted on concrete piers for accessibility and ease of piping maintenance.

Twin heat exchangers cut into discharge line at Sabine Station for cooling water from diesels powering the station. Dual mounting permits use of either unit while other is being cleaned.







(C. G. Harrison Photo)

Single mounting carries twin air cleaners and spark-arrestor type muffler well above possible gas zones.

Bypass (upper right) around scraper trap in main line just north of tie-in to Sinclair tunnel on bank of Houston Ship Channel. Trap drain is not yet installed.

Scraper trap and control gates (right) at extreme northern end of ten-inch line in yard at Sabine Station. Block gate seals trap against line pressure except when dispatching scraper.

Combination suction and discharge manifold system at Sabine Station, allowing either or both units to be put on the line, with check control of back pressures.

[*Continued from Page 10*]

quate bearing surface to maintain rigidity and support the weight of engines and bases. After casting the engine foundations on this slab, backfilling again brought the level around the engines to the proper height to carry the concrete station floor.

Provision is included throughout the line for frequent scraper runs, with the station in the East Texas field, known as Sabine station, equipped with a spool and bypass attached dierctly to the end of the 10-inch line so that a scraper may be sent from the very end of the main line. Normal flow of fluid is from the heat-exchanger into the main through a tee, with the spool on the upper run of the fitting, and with a block gate to seal the trap except when actually starting the scraper. A bypass, also equipped with high-pressure valve, permits line pressure to be built up behind the scraper for forcing it past the tee and into the stream.

At all stations down the line, Douglass, Livingston and San Jacinto, the scraper provisions are uniform, except that "Douglass" has provision for trapping and removing the 10-inch scraper from Sabine and also for starting the 12-inch unit down the line. The scraper traps are built directly into the run of the main line, with block gates on either side of the trapping device to permit it to be isolated while the cover is being removed for inserting or removing the scraper. The usual type of short bypass, with block gate, is provided for accommodating fluid flow and permitting the scraper operations to be carried on without shutting down the station or diverting crude flow into the station tankage. These scraper unit installations, as well as all other deviations from the direct main line, are made with preformed turns or ells, forged tees and other fittings, and all welding on the line was restricted to straight bevelled Vee-welding, in which the welds are build up in multiple beads from the apex of the Vee to a standard raised bead which provides the required factor of safety at weld over pipe walls.

The pipe line incorporates three weights of seamless pipe in each section. On the 57.76-mile stretch of 10-inch line connecting Sabine and Douglass stations, the first 8⅓ miles is 33.48-pound pipe, stepping down to 29.01-pound for the remainder of the section. An exception is at river crossings, where 41-pound pipe is used.

From Douglass to Livingston, and Livingston to San Jacinto station, 57.66 miles and 67.81 miles of 12-inch pipe respectively, the first 8⅓ miles of each section is 39.89-pound pipe, the remainder 34.55-pound to the succeeding station, except in the case of river crossings, where 49.56-pound pipe is used.

From San Jacinto station to the Houston Ship Channel tunnel all pipe is 39.89-pound weight. South of the Ship Channel the entire line is 49.56-pound pipe.

Many obstacles were met in the construction of the line, ranging from flooded terrain to a golf course. This last, rigidly barred to all machinery more ponderous than a sharpshooter or shovel, was ditched by hand, the line made up as for a river crossing, and then pushed by tractors throughout the 1440 feet of ditch traversing the links. Backfilling was also a hand job, and special care was taken to restore the grounds to their previous condition.

Almost from the outset of the work bad weather and then flooded rivers hampered the work of distributing materials, trenching, and laying the line. River crossings, originally estimated at spans which could be fabricated entire and handled across the stream in one drag, ran to as high as four sections, each of which was equipped with river clamps, and welded to the preceding section as soon as it had been maneuvered into the stream and the adjacent ends were abutting. So long were some of these built-up crossings that four boom-equipped units were required to make the final shift into place.

All river clamps were bolted around specially fabricated clamp sleeves. These sleeves, fabricated from heavy steel plate, were formed to enclose the weld and half of the pipe, a deep groove providing ample weld clearance. The lower section was welded in place, then the upper half set with hydraulic jack and the entire joint enclosed in a welded and sealed cover, against which the cast river clamp was fitted.

The entire line was wrapped and doped on the job, the river crossing sections being treated just long enough before being dragged through the stream to insure proper setting of the dope. Inspection of the pipe after completion of the drag showed that the river clamps had supported the pipe through the stream, and that the protective coating was in serviceable condition. Finding the coating on the extreme end of the line intact, after being dragged across the stream, it was assumed that the buried portion of the line, having traveled a shorter distance, would be in at least equally good condition.

The line is designed to handle East Texas crude in amounts up to 43,000 barrels per day, with additional crude coming into Douglass station from the Cayuga field over a foreign line. This heavy asphaltic crude is stored at Douglass until adequate stocks are built up, then batched through the line while East Texas runs continue to go into storage at Douglass tank farm.

At Sabine and San Jacinto stations two 80,000-barrel tanks provide working and storage tanks. Livingston station, being regarded solely as a booster unit, has but two 10,000-barrel working tanks. The Douglass tank farm is more extensive, having two 80,000- and two 55,000-barrel units. Only at Douglass is storage provided for classification of the various crudes to be handled, batching being handled through dispatching manipulation so as to insure normal transit of the entire line of whatever crude happens to be ahead of the latest batch being introduced.

During two days each month, to provide for handling a special crude through the line from a point some 15 miles south of San Jacinto station, it is necessary to divert line runs into storage at that point during the period when the south end is being used for specialized handling. Througout the remainder of each month it is planned to maintain regular flow of crude from up the line, with minor additions at junctions below the Ship Channel crossing which, however, are permitted to blend with the main stream and therefore do not introduce batching or dispatching problems.

Operation of the station will be by means of two-men shifts, provision being made at each of the stations for housing the station chief engineer. All inter-station communication and dispatching will be maintained by telephone, with company lines linking all stations and the main offices of the company at Houston and the refinery at Texas City.

Williams Brothers Corporation was general contractor on the line, station buildings were erected by the Hudson Engineering Company, and Sanderson & Porter were consulting and supervising engineers.

Sampling Distillate Wells a Simple Procedure

By K. E. CODY and D. M. LUNTZ
Gulf Coast Petroleum Laboratory, Inc., Houston, Texas

IN the design and economic consideration of any recycling plant associated with distillate production it is always necessary to have an accurate analysis of the raw well gas and a detailed evaluation of the recovered distillate. Otherwise, it is impossible to determine the size or type of plant and its money-making possibilities. Since these analyses are relatively easy to obtain, they should be procured during the initial stages of the development of any project.

One of the satisfactory methods of obtaining an accurate analysis of the raw well gas is to flow the stream into a high-pressure separator, collecting and analyzing samples of the separator vapor and liquid. Figure 1 shows diagrammatically a sketch of this type of operation. By compositing these two analyses according to a material balance on the separator, the analysis of the raw gas is obtained. This method of procedure naturally requires the metering of both the dry gas and the liquid.

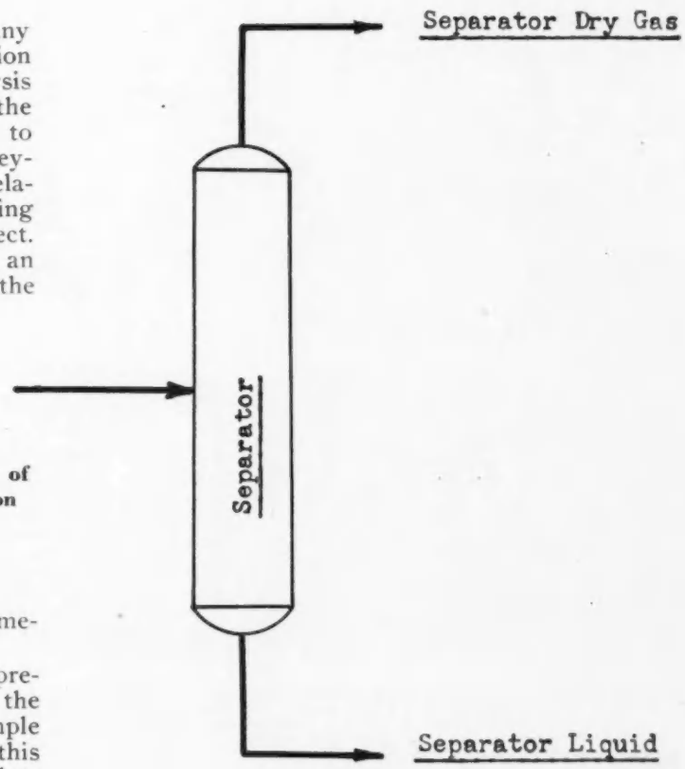


FIGURE 1
Diagrammatic Flow of Separator Operation

It is possible in most instances to take a representative sample of the raw gas directly from the well head before the choke. However, such a sample is very difficult to handle in the laboratory, and this method will not give enough distillate for a complete evaluation unless the sample is continually drawn into a small separator and the gas and liquid measured and handled as described above. The latter method is generally used in connection with portable testing units.

Samples of Raw Gas

Samples of raw well gas should never be taken from the line between the choke and the separator as the throttling effect of the choke changes the gas from a substantially homogeneous mixture into a liquid-vapor mixture. Sampling such a system is extremely difficult, if not impossible.

To illustrate the information which should be available in a complete distillate evaluation, a specific work sheet is presented with explanations of the various operations and results.

Table 1 gives the temperature and pressure conditions on the separator at the time the test was run, the analyses and quantities of dry gas and liquid, and the composition of the raw well gas, this last item being calculated by compositing the dry gas and liquid analyses according to the separator material balance. In the accurate Podbielniak analysis of

TABLE 1
Summary of Separator Operation

1. Operating Conditions:
Separator Pressure = 485 lbs./sq. in. gage
Separator Temperature = 76° F.

2. Quantities:
Separator Dry Gas = 475,000 S.C.F./hour
Separator Liquid = 470 gallons/hour

3. Podbielniak Analyses (Mol Percent):

	Separator Dry Gas	Separator Liquid	Raw Well Gas
Methane	94.53	13.12	92.88
Ethane	3.18	2.19	3.16
Propane	1.24	2.70	1.27
Iso-butane	0.32	1.52	0.34
Normal Butane	0.33	1.96	0.37
Iso-pentane	0.08	1.14	0.10
Normal Pentane	0.09	1.56	0.12
Hexane Plus Heavier	0.23	75.81	1.76
Total	100.00	100.00	100.00

Specific Gravity of Hexane Plus Heavier = 0.7809
Molecular Weight of Hexane Plus Heavier = 138

TABLE 2
Debutanization of Separator Liquid

1. Yields Based on Separator Liquid:

	Weight Percent	Volume Percent	Gallons/ 1,000 S.C.F. of Raw Well Gas
Input:			
Separator Liquid	100.0	100.0	....
Output:			
Gas	5.3	9.9	....
Debutanized Distillate	94.7	90.1	0.872
Total	100.0	100.0	0.872

2. Inspections of Products:

(a) Gas:

Analysis	Mol Percent
Methane	61.03
Ethane	10.20
Propane	12.59
Iso-butane	7.07
Normal Butane	9.11
Total	100.00

Gaseous Specific Gravity = 0.960 (Air = 1.000)

(b) Debutanized Distillate (Pentane Plus Heavier):

Specific Gravity @ 60° F	0.7788
Gravity—°A.P.I. @ 60° F	50.2
A.S.T.M. Distillation:	
I.B.P.—°F	120
5 percent	180
10 percent	209
20 percent	234
30 percent	259
40 percent	286
50 percent	317
60 percent	360
70 percent	418
80 percent	472
90 percent	541
95 percent	582
E. P.	603
Percent Recovery	97.0
Percent Residue	2.0
Percent Loss	1.0
Reid Vapor Pressure—lbs./sq. in.	2.7
Color—Saybolt	+4

TABLE 3
Yields and Inspections of Products from Distillation

1. Yields	Based on Debutanized Distillate: Weight Percent	Based on Debutanized Distillate: Volume Percent	Based on Raw Well Gas: Gallons Per 1,000 S. C. F.
Butane Free Gasoline	67.9	69.7	0.607
Kerosene	15.3	14.6	0.127
Bottoms	16.8	15.7	0.138
Total	100.0	100.0	0.872

2. Inspections	Butane Free Gasoline	Kerosene	Bottoms
Specific Gravity @ 60° F.	0.7591	0.8208	0.8393
Gravity—°A.P.I. @ 60° F.	54.9	40.9	37.1
A.S.T.M. Distillation:			
I. B. P.—°F.	136	430	517
5 percent	186	440	536
10 percent	200	442	539
20 percent	218	444	545
30 percent	233	447	549
40 percent	248	451	554
50 percent	264	455	562
60 percent	284	458	573
70 percent	304	463	585
80 percent	330	470	605
90 percent	360	479	644
95 percent	381	488	674
E. P.	400	500	685
Percent Recovery	98.0	98.0	98.5
Percent Residue	1.0	1.0	1.0
Percent Loss	1.0	1.0	0.5
Reid Vapor Pressure—lbs./sq. in.	2.7	.....	.....
Color—Saybolt	+30	+10	.....
Color—A.S.T.M.	.....	.....	4-½ Dil
Flash—°F. (P.M.C.C.)	.....	.....	270
Flash—°F. (Tag C.C.)	.....	187	.....
Sulfur—Wt. %	0.005	.....	.....
Octane—C.F.R.-M. (Clear)	53.8	.....	.....
Octane—C.F.R.-M. (1 c.c. T.E.L.)	62.8	.....	.....
Octane—C.F.R.-M. (3 c.c. T.E.L.)	74.4	.....	.....

a dry gas such as shown in Table 1, it is necessary to take a very large sample in order to be able to determine the presence of the small amounts of heavy hydrocarbons. As an alternative to taking a large sample, the heavy components can be concentrated by condensing them at a low temperature, or by absorption on charcoal, and metering and analyzing both the condensate and the uncondensed gas. Regardless of how this is done, it is important to obtain the correct composition of the dry gas, and almost any trouble is justified to get an accurate analysis.

Calculated Readily

In order to have enough of the pentane and heavier fraction for the evaluation work, four gallons of the separator liquid were charged to a laboratory glass stabilizer, wherein the liquid was debutanized. The overhead gas and debutanized liquid resulting from the operation were measured and analyzed. Knowing the quantities and analysses of these two streams, the analysis of the separator liquid was calculated readily. It should be noted that determining the separator liquid composition in this manner is more accurate than charging a small amount of the liquid directly into a Podbielniak apparatus for analysis, the reason being that a considerably larger amount of gas can be run in the Podbielniak apparatus when the stabilization operation is initially carried out on the separator liquid. The results of the stabilization operation are tabulated in Table 2.

Finally, the yield and characteristics of the 400° end point gasoline, the 400-500° kerosene, and the bottoms were determined. The debutanized distillate was fractionated carefully in a true boiling point still, the overhead being drawn off in separate cuts which were then blended together to make the products mentioned. Table 3 gives the data obtained and also shows the yields expressed in the conventional manner; i.e., based back on the raw well gas.

From a glance at Table 4, which compares the amount of butane-free distillate in the raw well gas with the amount actually recovered in the separator liquid, it may be seen that about 15 percent of this material was lost in the separator dry gas. It is possible to make calculations to ascertain approximately the effect of this loss on the inspections. However, for completely accurate inspections, it is necessary to employ some means for quantitative recovery of the distillate. At least one known pilot plant efficiently separates the gas and liquid by the use of high pressure adsorption.

TABLE 4
Recapitulation of Yields Based on Well Gas

1. Raw Well Gas Analysis	Mol Percent	Weight Percent	Gallons Per 1,000 S.C.F.
Methane	92.88	77.22	....
Ethane	3.16	4.92	....
Propane	1.27	2.91	0.346
Iso-butane	0.34	1.03	0.104
Normal Butane	0.37	1.12	0.110
Pentane Plus Heavier	1.98	12.80	1.022
Total	100.00	100.00	1.582

2. Volume Percent of Distillate Recovered	85.5
3. Butane-Free Distillate (Pentane plus heavier):	
Yield—Gals/1,000 S.C.F.	0.872
Specific Gravity @ 60° F.	0.7788
Gravity—°A.P.I. @ 60° F.	50.2
Reid Vapor Pressure—lbs./sq. in.	2.7
4. Butane-Free Gasoline:	
Yield—Gals/1,000 S.C.F.	0.607
Specific Gravity @ 60° F.	0.7591
Gravity—°A.P.I. @ 60° F.	54.9
Reid Vapor Pressure—lbs./sq. in.	2.7
Octane—C.F.R.-M. (Clear)	53.8

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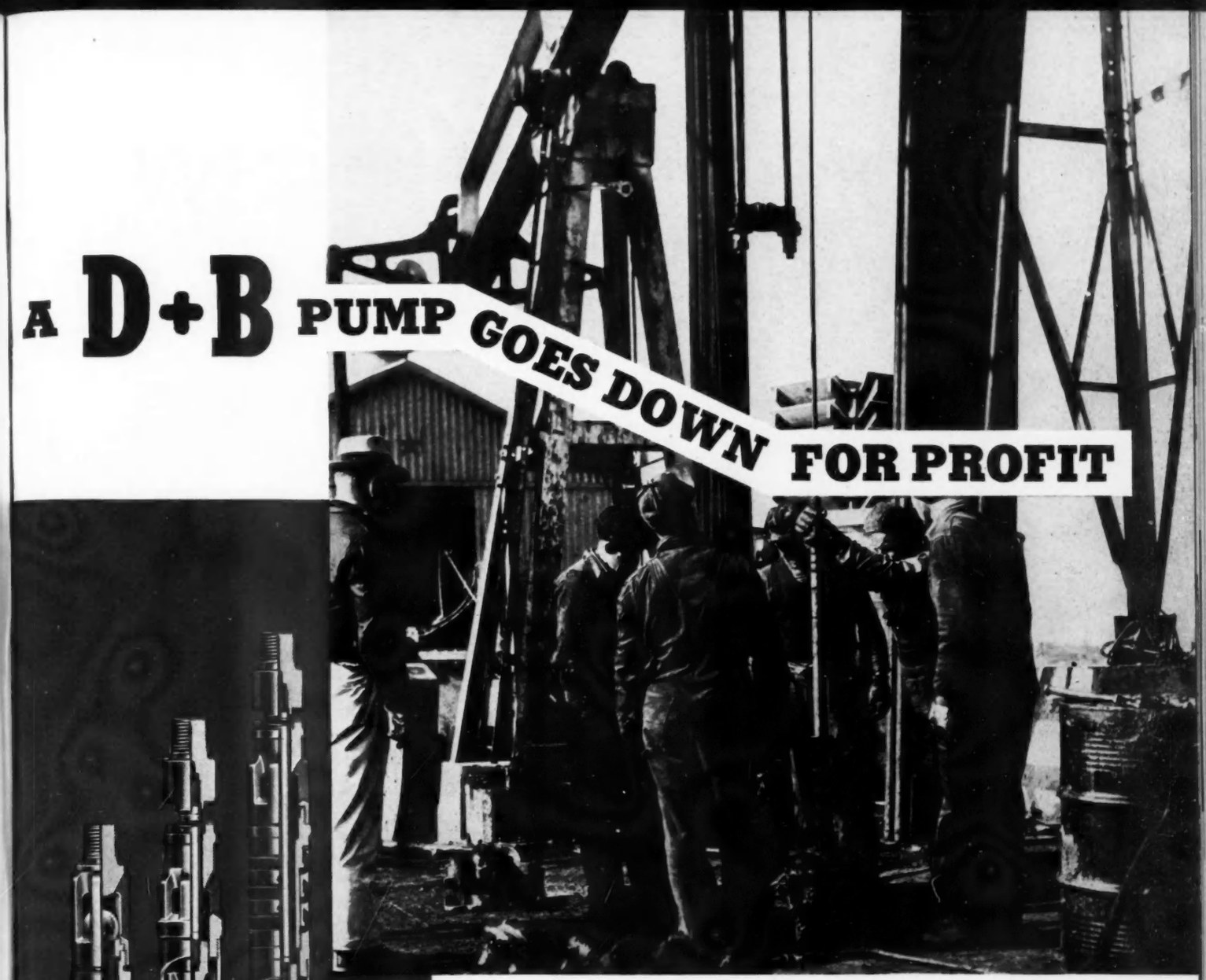

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Principles of Drilling Mud Control

Part 2

By SYLVAIN J. PIRSON
Head, Petroleum and Natural Gas Department, The Pennsylvania State College

THE physico-chemical principles which govern the physical behavior of clay suspensions are a consequence of the physical and chemical properties of the clay as well as of the chemical properties of the suspensions: the latter were the object of the first part of this article which appeared in The OIL WEEKLY of February 10, 1941, Vol. 100, No. 10, Page 21. The second part of the article deals with properties which are of more direct concern to the engineer in charge of drilling mud control.

V. Physical Properties of Clay Suspensions

The physical properties of clay suspensions are perhaps the most important in ordinary rotary drilling. Since they are often controlled by the chemical and electrical properties of the suspension their understanding is of primary importance in drilling fluid control.

1. *Density:*

Drilling mud being a heterogeneous fluid, the weight per unit volume is equal to the weight of the liquid plus the weight of the suspended particles. If the quantity of clay added per gallon of water is known, the density of the mud in pounds per gallon (d) is readily calculated by means of the following relation:

$$d = \frac{W_1 + W_2}{1 + \frac{W_2}{8.33 \times \rho}} \qquad (15)$$

in which W_1 is the weight of one gallon of water (8.33) in pounds or of a drilling mud fluid whose weight it is desired to change.

W_2 is the weight of clay or of weighing material added per gallon.

ρ is the specific gravity of the weight material. = 2.0 to 2.7 for ordinary clay but this figure may be considerably greater if commercial weighing materials are used which may contain Barite ($BaSO_4$, $\rho = 4.5$), Siderite ($FeCO_3$, $\rho = 3.85$), and Hematite (Fe_2O_3, $\rho = 5.2$). In practice, Barite is a preferred weighing material notwithstanding its lower specific gravity because of its lower hardness (3.0) compared to Siderite (3.5) and Hematite (6.0). Barite does not form a gritty suspension as with Hematite, therefore it does not cause a prohibitive abrasion of pump liners, swivel and drill pipe. The heavy material used in weighing muds is finely ground into powder so that more than 90% will pass a 200 mesh screen. Finer grinding is even recommended. Clay alone is able to raise the density of water from 62.5 lbs/ft³ to 85 lbs/ft³. Thereafter weighing barites are required and muds as heavy as 135 lbs/ft³ have been obtained. Muds weighing 100 lbs/ft³ are normally suitable to drill the majority of the wells. However exceptional cases have been reported where mud weighing more than 135 lbs/ft³ has been necessary; it is required to use highly effective weighing material under such conditions. The use of galena (PbO, $\rho = 7$) has been suggested[8] since its specific gravity is about twice as high as that of barite and its hardness is very low (2.5). Galena can easily be obtained in fine powder and it is easily suspended with clay in water without unduly increasing the viscosity of the fluid. Unfortunately, the material is expensive and it lowers the pH of the suspension. Thus far there is no account of the use of galena as a weighing material.

In field practice the density of mud is measured by means of the mud hydrometer described by Reistle et al.[9] or by means of a mud balance[10].

2. *Viscosity:*

The viscosity of a liquid may be defined as the internal friction or its resistance to flow or shear. The standard unit of viscosity, the poise, is defined as the tangential force required to maintain a velocity of 1 cm/sec. between two planes 1 cm² in area, and 1 cm apart. The centipoise, the unit most commonly used, is .01 poise. The *fluidity* or *mobility* of a liquid is the reciprocal of the viscosity. For dilute suspensions, the viscosity may be calculated by the Einstein equation

$$\eta_s = \eta_m (1 + K\phi) \qquad (16)$$

in which: η_s is the viscosity of the suspension
η_m is the viscosity of the suspending medium
ϕ is the volume of the dispersed colloid.

K is a constant equal to 2.5 for spherical particles and, for dilute hydrophobic sols, i.e., for colloidal particles not readily wet by water, which is not the case for clays. K is actually a coefficient of mechanical interference of the particles among themselves.

Einstein's equation does not apply satisfactorily to the calculation of mud viscosities because the clay particles generally do not behave like independent spheres, nor do they retain their original volume; each of the particles in suspension adsorbs a more or less thick hull of water which increases considerably the volume ϕ of the dispersed phase. However, under certain conditions of treated muds by viscosity reducers Einstein's equation is observed.

Many factors affect the viscosity of clay suspensions; concentration, temperature, degree of dispersion, solvation, electrical charge, presence of electrolytes, and rate of flow.

a) Concentration: As the quantity of clay in suspension is increased, Einstein's equation give a rough idea of how the viscosity will vary. On account of the solvation or hydration of the particles or the formation of a water hull around the particles, the relation is inaccurate in most cases. The relation gives however a qualitative idea of mud thickening

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when the formations penetrated contain shales in appreciable quantity.

b) Temperature: An increase in temperature produces an irreversible increase of viscosity. This is important in drilling deep wells where the temperature may reach well above 200° F and in which a thickening of the mud is often observed. Mud thickening is objectionable because it increases the power required to circulate the fluid and stall the engines.

c) Degree of dispersion or the size of the particles has a great influence on viscosity as colloidal clay is mainly responsible for the increased viscosity of the suspension. For equal weight of suspended clay, the smaller the particles, the greater the viscosity.

d) Solvation or hydration of the particles has been discussed under a). An increase of the size of the particles by adsorbed water reduces the amount of water available for lubricating the particles and increases their mechanical interference.

e) Electrical charges: Smoluchowski [11] has pointed out that the viscosity of a suspension of charged particles should be different from one containing uncharged particles as the motion of a charged particle in a liquid sets up a counter-electromotive force which results in an apparent rise in viscosity. He combined Einstein's equation with the formula giving the potential of a charged particle (ξ potential) and derived a new relation for the viscosity of a colloidal suspension.

f) Rate of flow: the speed at which the suspension is moving is important as it affects the gel strength of the mud (to be discussed in a later section).

g) Presence of electholytes: Electrolytes have a very marked effect on the viscosity of clay suspensions particularly if the electrolytes are salts with large molecules. Since their effect is usually to achieve a reduction of viscosity they are known as viscosity reducers. The best known are: calgon or sodium hexametaphosphate, sodium tannate, sodium pyrophosphate, sodium silicate, etc. The mechanism of the viscosity reduction is not quite clear but it is generally believed that the viscosity reducing chemicals are adsorbed and oriented on the clay particles and therefore prevent adhesion between the particles and the formation of a resistant gel structure. It has also been suggested that the viscosity reducers affect the gel rate rather than the viscosity proper.[13] It is not believed that they affect the ionic atmosphere which surrounds the particles since the amount of chemical necessary to reduce the viscosity to a minimum is proportional to the amount of clay rather than to the amount of water in which the dissociated ions are dispersed. Other views on the action of electrolytes on the viscosity of clay suspensions have been expressed by Henry and Taylor [6]; their theory will be reviewed later after a further consideration of the particular behavior of clay suspensions.

The measurement of the viscosity in the field is accomplished by means of the Marsh funnel which works on the principle of the measurement of the time of efflux of a given volume of liquid through a calibrated orifice, or by means of the Stormer viscosimeter which measures the driving force necessary to shear layers of liquid past each other. The procedures are now standard practice and a description of the technique may be obtained from Reistle's article [9].

3. *Thixotropy or Gelation:*

The thixotropic property of a suspension is its ability to form a reversible isothermal transformation from a sol to a gel. The word thixotropic, coined from the Greek, means literally "to change by touching." The gel may be reverted to a fluid sol by mere agitation. The formation of a gel at a rate varying with the physico-chemical properties of the suspension, is the property which gives clay suspension their *plasticity*. A suspension which does not exhibit plasticity will have a rate of flow proportional to the driving pressure; this is characteristic of purely

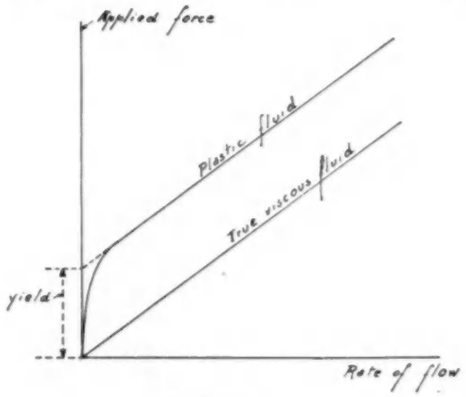

FIGURE 4
Comparison between plastic and viscous fluid

viscous fluids. But a suspension which has formed a gel on standing will exhibit plastic properties, i.e., the mass will start to flow only after the application of a given external pressure. The force necessary to deform the system, so that plastic flow can begin, is called the *"yield value"* or *"gel strength."* A better idea of these relationships may be obtained from Figure 4.

It is generally admitted that the development of gel strength in a clay suspension is the result of the formation of a resistant structure similar to a house of cards structure where the cards would represent the plate like particles of clay. The strength of the structure would be provided by the broken chemical bonds which exist on the broken edges of the plates. The gel structure does not need necessarily to be continuous since gels have been observed when the clay concentration is but .05 percent, but at this great dilution the presence of an electrolyte is necessary in order to increase the effective ionic attraction between the particles to such a point that the particles reach an equilibrium position and form a gel. Without the presence of an electrolyte, it is necessary that the clay concentration be greater before gelling becomes possible; Loomis et al [12] report a concentration of 1.4 percent of a certain clay for particles .014 mm in diameter as the minimum necessary for gelling without the addition of salts. This concentration permits an edge to edge contact of the particles and the formation of a continuous but loose structure. A very important consideration in drilling mud is that of the *rate of gel formation* or of *"setting time."* Freundlich defines arbitrarily the setting time as the length of time during which a suspension must remain still in a test tube before it attains sufficient strength to prevent flow when the test tube is inverted. Another way of expressing the same idea is to measure the initial gel strength or the gel strength after a specified period of time, usually five minutes. Garrison [13] reports the measurement of the gel rate by means of the torsion wire gelometer; the gel strength is measured at intervals of time by the torque imparted on the torsion wire which will just start rotation of

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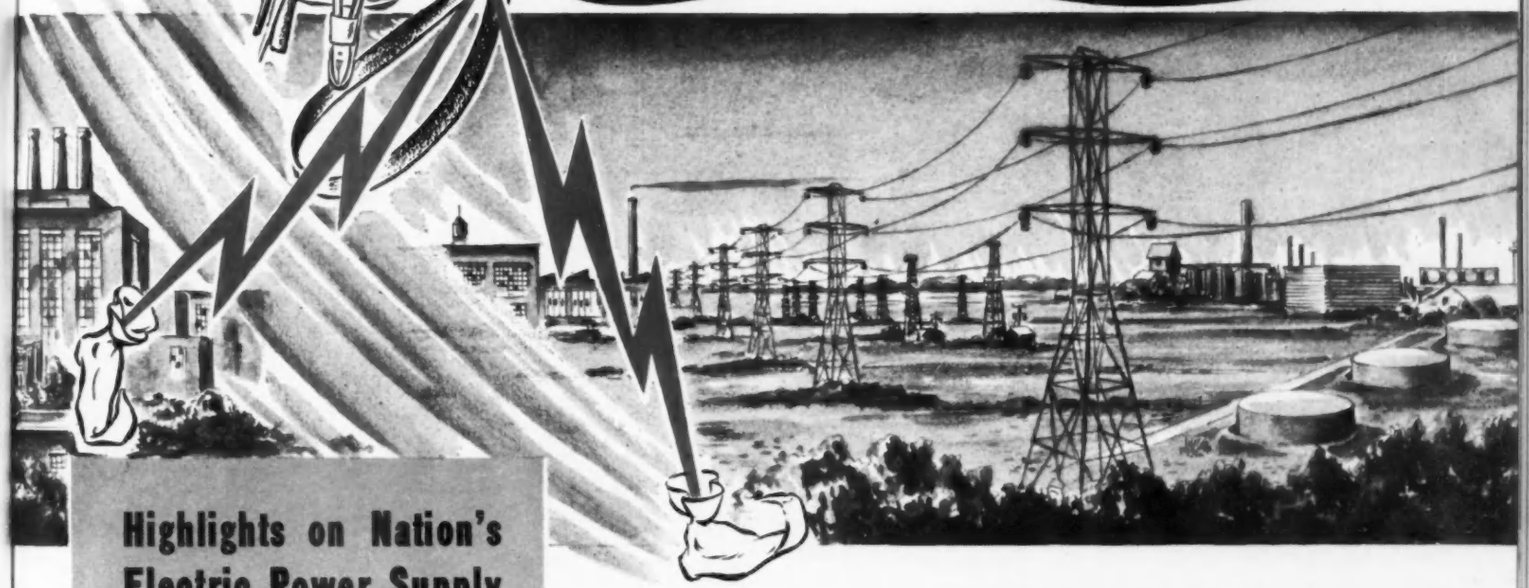

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a cylinder embedded in the suspension. He finds that the gel strength, s, as a function of time, may be expressed by:

$$s = \frac{s' k t}{1 + k t} \qquad (17)$$

in which s' is the ultimate gel strength that is approached after a very long period of time.
t is the time
k is the gelling rate constant.

The factors which affect the gel rate are numerous and not well understood as the published information concerning these factors is at times contradictory. For instance, Garrison[13] has noticed that the pH of the suspension affected the gelling rate whereas Reed[4] reports that it is relatively independent of hydrogen ion concentration. Perhaps this discrepancy comes from the possibility that measurements were made not only on different clays but on clays of different degrees of base saturation. Measurements of the gel rate with increasing bound base or acid have not been reported in the literature. It is known however that electrodialyzed or hydrogen-bentonite will not gell, but upon the addition of small quantities of electrolytes (KOH or KCl or strong acids) a fast gelling suspension is obtained.

Other factors which affect the gelling rate of a clay suspension are: the temperature, the degree of dispersion, the electrical charges, the valence of the electrolytes present and probably many other factors as yet undetermined. It has been established that the gel rate will be considerably increased by polyvalent ions. An increase in temperature decreases the gel rate in an irreversible manner. This is important in deep drilling when a mud may be operating at a fairly high temperature and should the gel rate and gel strength become unduly reduced there would be danger of the drill cuttings settling during a shut down period.

The addition of a finely divided clay will increase the gelling rate as well as the gel strength of a drilling mud. The effect of electrical charges on the clay particles or of its degree of ionic dissociation has already been reviewed.

The gel rate and viscosity, although being altogether different physical quantities, can not be well measured independently of each other by present methods. Since viscosity measurements involve a certain flow or rate of shear in the suspension, the gel is continuously broken by the fluid motion but also continuously formed. Therefore, the viscosity measured on a given suspension at a low rate of shear will have a greater value than the viscosity measured on the same suspension at high speed or high rate of shear. One attempts to obviate this difficulty with the Stormer viscosimeter by measuring viscosity at the constant rate of shear of 600 r.p.m. but due to the fact that variable gel rates may be encountered one can not be sure of the quantity measured unless the force of resistance to movement produced by gelling is subtracted from the viscosity measurements. This gives a great uncertainty to viscosity measurements as carried to date on drilling muds. It is quite possible that the large viscosity variation observed on certain clays of varying degrees of saturation is partly due to this effect. A program of research to investigate this point is now under way at this institution.

4. *Rheopexy:*

Rheopexy is a phenomenon related to thixotropy in the sense that rheopexy is an acceleration of the gelation rate induced by mechanical action such as rolling the fluid container around a certain axis or by gently tapping the container. The phenomemon has to do with the orientation of *anisometric particles* (rod-like or plate-like). The acceleration of the gelling rate may be quite considerable; for instance, Hauser and Reed[14] report experiments on a 1.3 percent bentonite suspension which normally set after 25 minutes rest, and which solidified after 15 seconds following the gentle tapping of the container.

In the drill pipes in rotary drilling, rotation and streamlined flow of the mud may favorise rheopexy, thereby giving rise to an unduly high rate of gelling and gel strength resulting in higher circulating pump pressure. With muds showing this phenomenon to a marked degree it will be well to use turbulent flow of the mud in the drill pipes.

5. *Dilatancy:*

Dilatancy is a phenomenon associated with the close packing of grains which thus far has found no application in drilling mud but which it is interesting to consider in passing. Certain muds, particularly those made of relatively coarse grains will show an excess of water after shaking the container by vibration whereas if the mixture is stirred slowly or slowly mixed the excess water will disappear.

6. *Swelling:*

A very important consideration in drilling mud is that of the swelling of clays and for two reasons, first the amount of colloidal matter contained in a clay increases with its swelling ability and, second when drilling, beds are often encountered which will swell or increase in volume; they are the so-called "heaving shales." The ability of clays to swell in water is dependent on many factors: the lattice structure of the minerals composing the clay, the base exchange capacity, the degree of saturation, and the silica-sesquioxide ratio.

When the ratio $\frac{SiO_2}{Al_2O_3+Fe_2O_3}$ is high such as in montmorillonite clays the base exchange capacity is high and these clays are found to possess the greatest swelling ability when placed in contact with water. Referring to the schematic representation of the montmorillonite crystal, it is seen that water can infiltrate between the layers of unit cells and pry them open as they are only held together by weak bonds. Conversely, kaolinite clays, the crystal of which is composed of layers of unit cells held together by strong bonds and which further possesses a low $\frac{SiO_2}{Al_2O_3+Fe_2O_3}$ ratio and therefore a low base exchange capacity, exhibit very little swelling. Bauxitic clays, found in tropical regions and which possess an exceedingly low $\frac{Si_2}{Al_2O_3+Fe_2O_3}$ ratio (Table 4), exhibit practically no swelling properties in water.

In Figure 5, are reproduced according to Mattson[15] the results of swelling studies on various clays which illustrate the conclusions mentioned. It is noted that the maximum swelling is attained in each case when the quantity of NaOH added to the suspension just satisfies the maximum base exchange capacity as measured by electrodialysis. The addition of an excess amount of hydroxide has for effect the suppression of swelling; this is known as the *"salting out effect."* Starting with a base saturated clay, the addition of acid will similarly reduce swelling.

The above conclusions may prove important in

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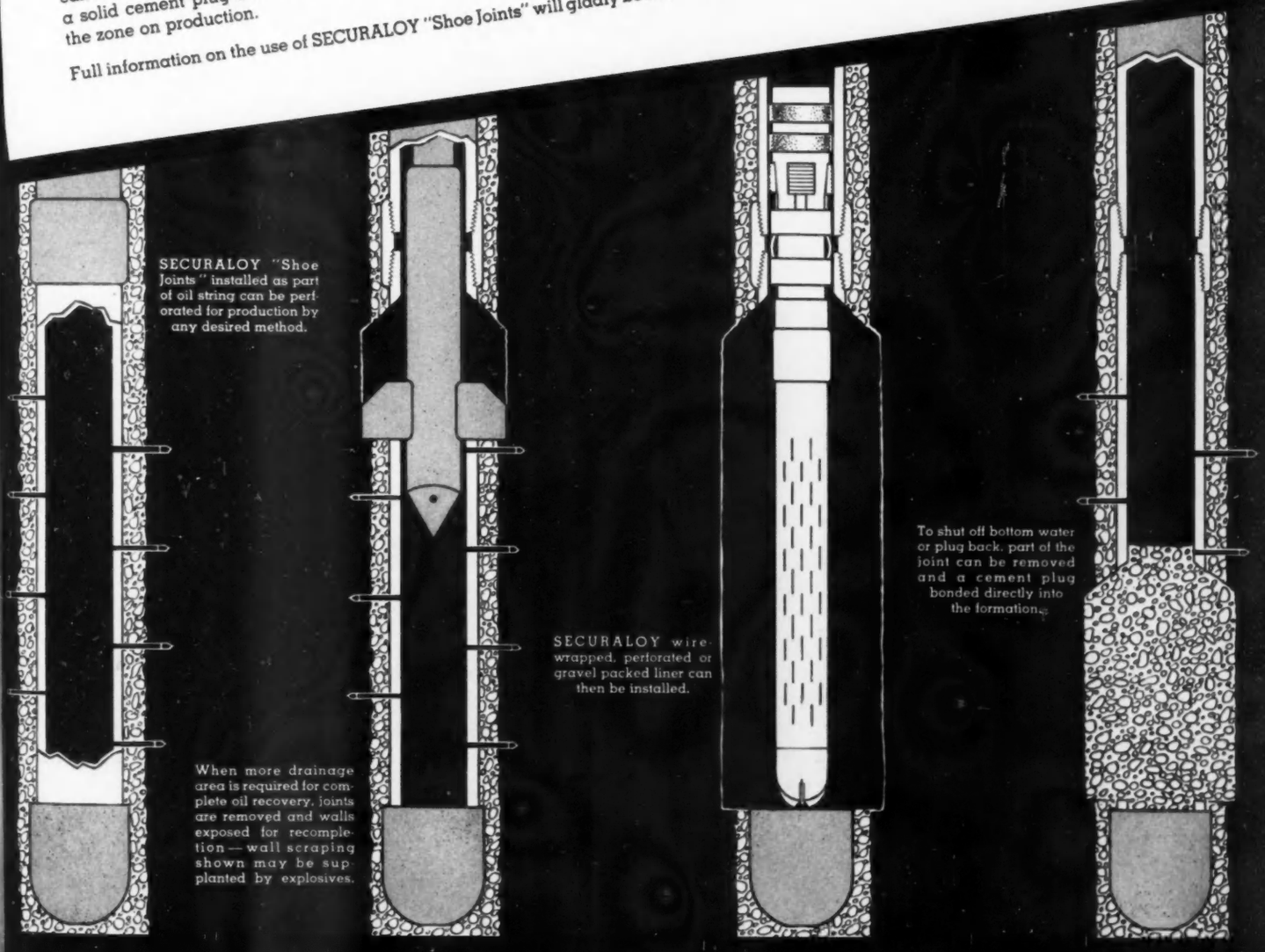

SECURALOY "Shoe Joints" installed as part of oil string can be perforated for production by any desired method.

When more drainage area is required for complete oil recovery, joints are removed and walls exposed for recompletion—wall scraping shown may be supplanted by explosives.

SECURALOY wire-wrapped, perforated or gravel packed liner can then be installed.

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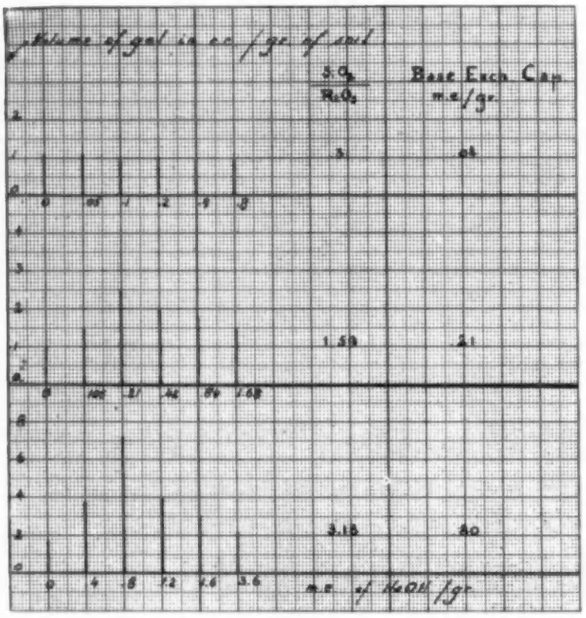

FIGURE 5
Swelling of clays of various sesquioxide-silica ratios and base exchange capacities according to quantities of added base. (After Mattson.)

future studies on the control of heaving shales.

7. Flocculation and Deflocculation:

Flocculation of a clay suspension is the process by which the particles are attracted toward each other and form permanent aggregates or *"flocs"*; the process is also called *coagulation*. The opposite process or *deflocculation* consists in the stable dispersion of the particles in the subdivided state; the process is also called *"peptization."*

In the flocculation process it is possible to notice under the microscope that the flocs are made out of multiple particles or "curdles" which settle rapidly by virtue of their increased diameter according to Stokes Law (Formula 3). The particles viewed with dark field illumination under the microscope exhibit practically none if any Brownian Movement. The *stability* of the suspension is said to be low.

To the contrary in the deflocculated state, the particles settle very slowly on account of their reduced diameter; they are animated by a very intense Brownian Movement and the stability of the suspension is said to be high. An explanation of these opposite phenomena may be arrived at by considering clay suspensions as colloidal electrolytes. As already mentioned above, when a clay is brought into suspension in water, the adsorbed ions dissociate from the clay complex and the latter acquires, as a result of the dissociation, an electric charge equal to the sum of the electric charges of the ions which have left the complex, the clay complex attaining thereby a certain potential. It has also been mentioned that certain ions are attracted more than others; more particularly, bivalent ions such as Ca^{++} are more strongly adsorbed than monovalent ions such as Na^{+}. Thus a Ca-Clay in suspension is less dissociated than a Na-Clay and therefore the electric negative charge on the clay complex of a Ca-Clay is less than on the Na-Clay complex. In fact the potential of the Ca-Clay complex is so low that the particles in the suspension animated by the Brownian Movement are unable to repel each other; they collide and stick together, form flocs, and precipitate by virtue of Stokes Law. To the contrary, the negative charge on the clay complex of a Na-Clay is so high that the particles effectively repel each other; they never touch and therefore would remain indefinitely in suspension if it were not for the action of Stokes' Law which will ultimately precipitate them. In between the two cases, it is possible to predicate that there will exist a limiting case where the particle will be ready to flocculate or at which flocculation does not quite start; the potential on the particles is then called *"critical."*

Flocculation of clay suspensions may be accomplished in various manners:

(1) By lowering the potential of the particles in suspensions. This may be done by adding an electrolyte of polyvalent ions such as Ca^{++}, Mg^{++}, etc. and better yet of Al^{+++}. The positive ions are strongly adsorbed by the colloidal clay complex and their positive charges serve to neutralize the negative charges on the clay particle, therefore lowering the repulsive forces between particles and promoting their coagulation.

(2) By changing the clay to a H-Clay by means of a strong acid, H-Clay being poorly dissociated will precipitate due to the low charge on the clay complex.

(3) By adding an excess of a normally peptizing electrolyte such as NaCl. The large excess of Na^{+} in the solution will lower the dissociation of the clay

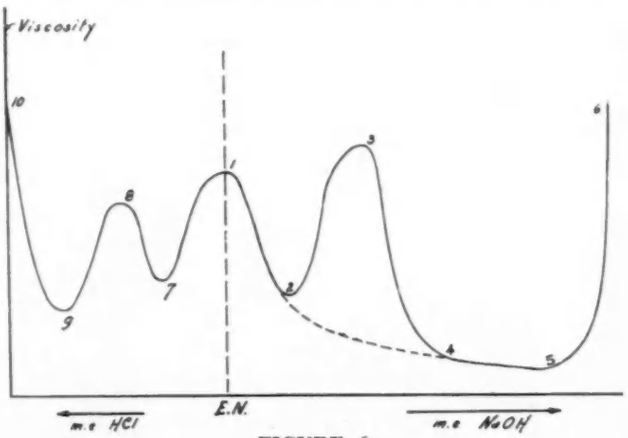

FIGURE 6
Variation of viscosity with added bases and acids. (After Henry and Taylor.)

complex by common ion effect, therefore the charge on the particles of clay will be reduced and coagulation will take place.

(4) By raising the temperature. This is important in drilling mud control at great depths. It is known that drilling muds used in deep holes show an increase in viscosity; this is partly due to temperature effect.

(5) Mutual coagulation by a colloidal dispersion whose particles are charged with opposite sign. This phenomenon however is not likely to occur in drilling mud work.

It may be well to review now the theory of Henry and Taylor[6] concerning viscosity changes as the electrodialyzed clay is progressively saturated with acidic or basic ions. They have observed that the point of exchange neutrality E.N. is always a maximum in the viscosity curve (Figure 6), therefore E.N. is probably a point of symmetry when one charges the clay particles with opposite charges or by the addition of basic and acid electrolytes. With

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increasing pH resulting from the addition of hydroxide, the viscosity drops from 1 to 2 and with certain clays and kaolins to point 4 according to the dashed line but with bentonitic clays due to swelling and hydration and therefore formation of gel, one notices an increase in viscosity from 2 to 3 and thereafter from 3 to 4 a viscosity reduction due to an excess of electrolyte (common ion effect). The maximum of viscosity 3 should be observed when the clay is substantially saturated since this gives the greatest swelling. From 4 to 5, there is a long deflocculation range (to which the pH drilling mud is often adjusted because it gives the minimum viscosity with the greatest stability). For 5 to 6 the clay is flocculated by excess reagent.

On the acid side of exchange neutrality, the clay becomes progressively saturated with anoins. From 1 to 7 there is a marked decrease in the viscosity due to deflocculation with successive swelling from 7 to 8 and salting out effect from 8 to 9 and coagulation from 9 to 10 with a resulting increase in viscosity.

It is quite probable that the above relations are obscured by the influence of gel rate variations as no attempt has been made to remove this factor from the curve of Figure 6.

8. *Adsorption of Gas (Gas Cutting):*

The adsorption of clay suspensions for ions has been reviewed previously. It remains to discuss the process by which gas is retained by drilling mud, a very important subject in rotary drilling, usually designated under the name of "gas cutting." During the process of drilling, gases under high pressure are often encountered and a volume of gas at least equal to the volume of the pores in the rocks drilled through and expanded to atmospheric conditions must be removed with the drill cuttings. The gas during the drilling process is held in several ways:

(1) By direct mixture. The gas brought to the surface finds it difficult to work its way out of a viscous fluid which under the conditions of relative quiescence in the mud pit may further set to a stiff gel. Therefore it is apparent that it is necessary to agitate the mud by a steam gun in order to liberate the gas, or to jet the mud into the air in sprays, or to pass the discharged mud over a vibrating screen.

(2) By solution of the gas in the suspension's free water. The solubility of hydrocarbon gases being relatively small in water, this is a negligible factor.

(3) By adsorption of the gas on the colloidal particles. The amount of gas adsorbed on the surface of the clay particles will vary according to various factors: degree of subdivision of the particles, character of the surface, state of suspension, nature of the unsaturated chemical bonds, pressure of the gas, nature of the gas, etc., to mention only a few of the factors.

(a) The degree of subdivision has been reviewed in a previous section; suffice it to remind the reader that the available surface varies inversely as the radius of the particle but that further adsorptive surface may be available if the clay structure is porous.

(b) That the surface of certain clays is more adsorptive to hydrocarbon gases than that of others is generally conceded but little data if any are available on this subject.

(c) The physical state of the particles in suspension is important, particularly the state of coagulation. At first sight, one would believe that a coagulated clay. which consists of aggregates forming particles of larger size and surface than the individual particles, would have less adsorptive power for a given weight of colloid than the deflocculated clay. But apparently other factors come into play and particularly the nature of the adsorbed ions and the number of unsaturated chemical bonds. Bowden [6] has reported that for equal weights of a Ca-Clay and a Na-Clay, the adsorption of Ca-Clay for ethane is considerably greater than for the Na-Clay notwithstanding the fact that the measured surface of the grains of the Ca-Clay was at least ten times smaller than that of the Na-Clay. It is possible that the coagulated Ca-Clay particles were able to imprison the gas but it is more likely that the Ca-Clay possesses unsaturated Ca^{++} ions, bound to the clay particle by only one valence, leaving the other valence free for the adsorption of gas.

(d) The pressure of the gas is a very important factor since the amount of gas adsorbed, Q, as a function of pressure is given by the Freundlich equation:

$$Q = C\,P^{\frac{1}{n}} \qquad (18)$$

in which: C and n are constants depending on the nature of the gas and the adsorbing substance.

P is the pressure of the gas.

Light gasoline fractions are more strongly adsorbed than methane or ethane and sometimes it is very difficult to remove either one from the mud fluids unless the latter be heated to a temperature of several hundred degrees. It has been reported that a sample of mud, taken from the slush pit of a well drilled to 9000 feet, dried and kept for over a year outdoors, when mixed with water in the proportion sufficient to give a good drilling fluid, produced a gas-cut mud of density less than water. This example shows that gas cutting by adsorption is of much more importance than generally realized. This type of gas-cut mud can only be overcome by chemical treatment as heating not only would be prohibitive but would ruin the properties of the mud. The writer ventures to suggest that this type of adsorption gas cut is likely linked to a base exchange phenomenon; i.e., if for some reason in drilling through limestone, dolomite or siliceous lime the mud would be transformed into a strong Ca-mud, it would retain a greater quantity of gas. This gas could be eliminated and released by transforming it anew into a Na-mud, thereby reducing the danger of blow-out; this may be the basis for the chemical treatment of gas-cut muds.

9. *Filtrability:*

Perhaps the most important property of a clay suspension from the point of view of rotary drilling is its ability to form a thin and impervious cake on the walls of the hole. The wall building properties of the drilling mud must be such according to Larsen [18], that it will confine oil, gas and/or water to their native sands, will prevent caving of the loose formations, will prevent the swelling and disintegration of shale formations by absorbing water, will prevent the sticking of the drill pipes by decrease of hole diameter due to a too thick filter cake, will not impair running the casing as would be the case as a result of formations caving or of a thick mud cake, will not prevent a good cementing job, and finally that it will not impair production of oil as a result of a watered-off sand.

Most of these requirements can be fulfilled if the mud cake is thin and impervious; the factors which affect these two requirements are the size of the

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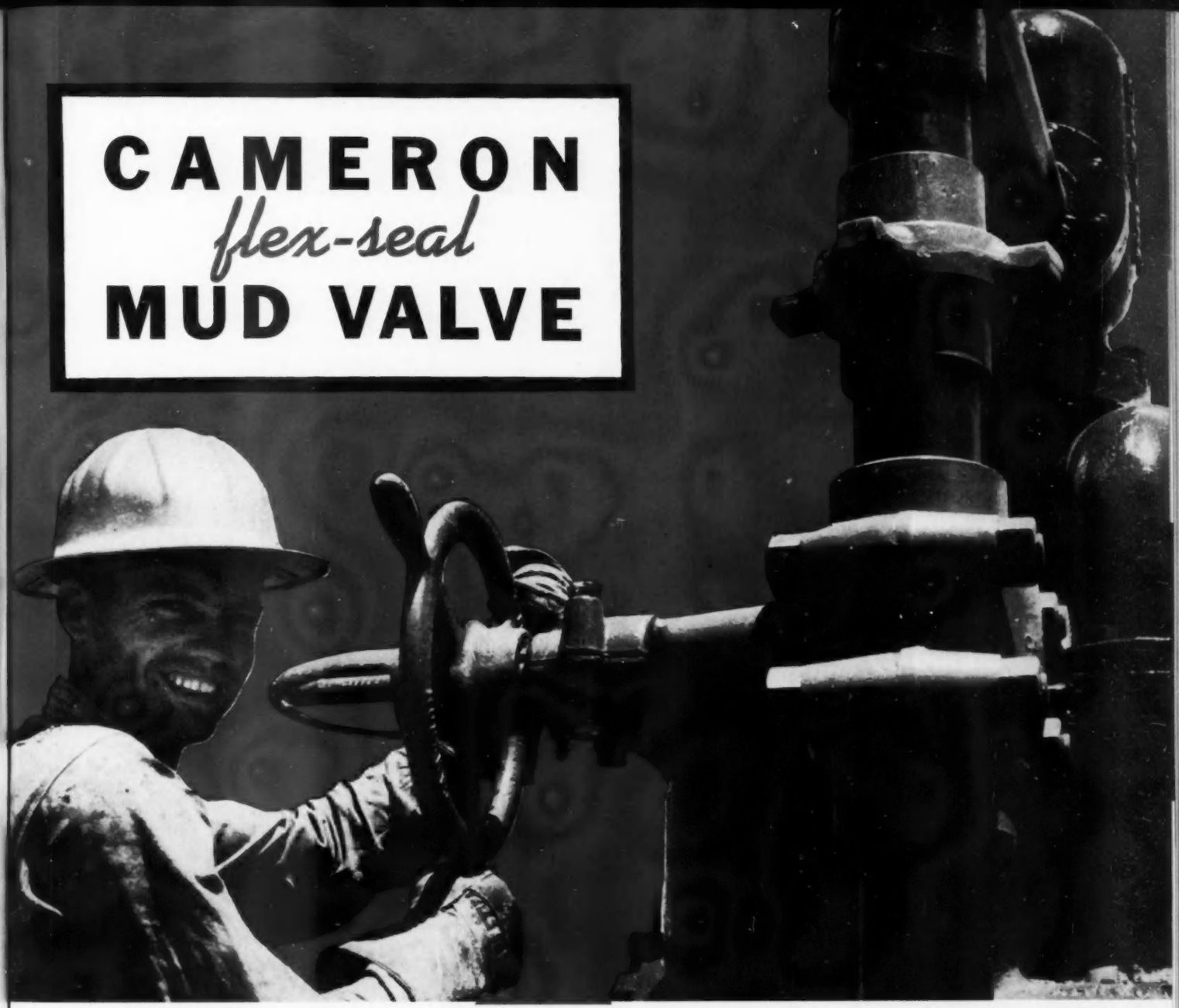

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particle, the deflocculated state of the mud, the ionic saturation of the clay, the temperature, the pressure of the mud, the rate and type of flow, gel rate, etc.

a) It is well established that a highly colloidal clay well dispersed into its elementary particles, in other words, a deflocculated clay will give the most impervious cake with the least thickness. These two qualities always go hand in hand, because in order to have a filter cake, a certain amount of water must filter into the formations leaving the solid particles in the cake. It is therefore natural that finely divided particles form an impervious seal with small wall thickness. This is due presumably to the plate-like character of the dispersed particles, which, on the average, have a thickness one hundred times smaller than the other two dimensions. In the plastering process, the particles presumably orient themselves in a manner not unlike the scales on the skin of a fish. In order to obtain a flake deposition of this type it is probable that the rate and type of flow will be favorable on account of the rheopexic properties of clay. The writer knows of no reported experiments where a truly rheopexic mud was circulated under turbulent and streamline flow, but this point is worth investigating. Streamline flow, theoretically, should favor a thin and impervious cake since the particles would all be oriented in the same manner, increasing the gel rate and promoting a "fish scale" deposition of the mud cake. Conversely, in a turbulent type flow the particles would be oriented at random and the cake would therefore be more pervious. It may be well to bear in mind the probable advantageous use of strongly rheopexic muds in slim hole drilling where loss of diameter is a very important consideration.

b) That Na-Clays are deflocculated and therefore are in suspension in a finely divided state is well known, whereas Ca-Clays are flocculated. The latter produces very permeable sheaths on the walls of the wells and therefore their filter cake is thick and the water loss to the formations is high. Ca-Clay muds are very unsuitable as drilling fluids. Such a mud may develop out of a perfectly good fluid by base exchange when drilling through limestone, dolomite, siliceous lime or, most of all, when drilling through cement.

c) Temperature will tend to flocculate muds, therefore as the drilling depth progresses, the mud cake will have a tendency to become thicker. The use of mud thinners is indicated in this case.

d) Pressure will tend to increase the mud wall thickness since the filtration of water from the suspension is increased with pressure, other factors remaining constant, and therefore more solid particles will adhere to the walls. A close control of the deflocculated properties of the drilling fluid is therefore indicated as the depth of drilling increases.

e) The gel rate or the speed at which a resistant structure is formed is perhaps more important than the gel strength in building a mud cake. However, no published data are available on this point.

VI. Application to Drilling Muds

At this point it may be well to recapitulate the functions of drilling fluids with regard to the principles of control of their properties. They are as follows:

1. To lubricate and cool the bit.

2. To provide hydrostatic pressure in order to keep in check the flow of high pressure gas, oil or water. The control of the density of the fluid provides for this function.

3. To remove the cuttings from the bottom of the hole. The velocity, coupled with the density of the fluid, achieves this purpose.

4. To hold the cuttings in suspension during shut down times. The thyxotropic properties of the mud provide for this.

5. To form an impervious mud cake thus preventing the disintegration of the wall of the wells by swelling, solution or the watering of the producing formations. The deflocculated state of the particles and their absorbed bases are responsible for this function.

6. To prevent loss of circulation by sealing crevices or large openings. The gel-forming ability of the mud will perform this function but it is often necessary to enhance the solidification of the mud by incorporating solid particles such as mica flakes, fibers or cement in order to seal especially large openings.

VII. Special Drilling Mud Problems

1. *Heaving Shales:*

One of the most baffling and costly problems encountered in rotary drilling is that of "heaving shales." Many a well has been lost because upon withdrawal of the pipes in order to replace the bit the bottom always came up a few hundred feet, at times more than a thousand feet. Holes were also lost in shale sections due to the swelling of the walls which finally seized and froze the drill pipes. Someone has said that the successful solution of the heaving shale problem would open up reserves of oil twice as large as those now on hand. If true, this is a fifteen billion dollar problem, worth careful consideration.

Various explanations of the heaving phenomenon have been offered, the most plausible being as follows:

a) *Mechanical Heaving*—The plastic flow of shale occurs under the existence of pressure differences due to the overlying rocks. The pressure difference may be produced by the existence of fault zones, variations in the overall rock density due to rapid thickening of formations or due to orogenic stresses in the substratum. These last forces, when released by the occurrence of earthquakes, may produce sudden changes in the rock pressure distribution.

b) *Chemical Heaving*—The shale, when brought in contact with drilling fluid, lends itself to a base exchange phenomenon which produces swelling and disintegration. This type of trouble lends itself readily to chemical control and many wells have been successfully drilled through heaving beds when the base exchange phenomenon alone is the cause of heaving. Baker and Garrison[19] report the successful completion of 17 wells through heaving shales on the Gulf Coast of Texas and Louisiana to the end of 1938, by the use of a strong solution of sodium silicate, sodium chloride and bentonite. The purpose of the sodium silicate at high concentration is to keep the cuttings of shales in a flocculated state as well as the walls of the well. This solution acts as a protective coating against disintegration. The action of sodium silicate is further increased by the addition of sodium chloride but the solution as such has no gel properties. The addition of about 1 percent bentonite gives the silicate mud good gelling properties: reasonable gel strength, rapid gel rate and a favorable increase in gel strength with increasing temperature. The vis-

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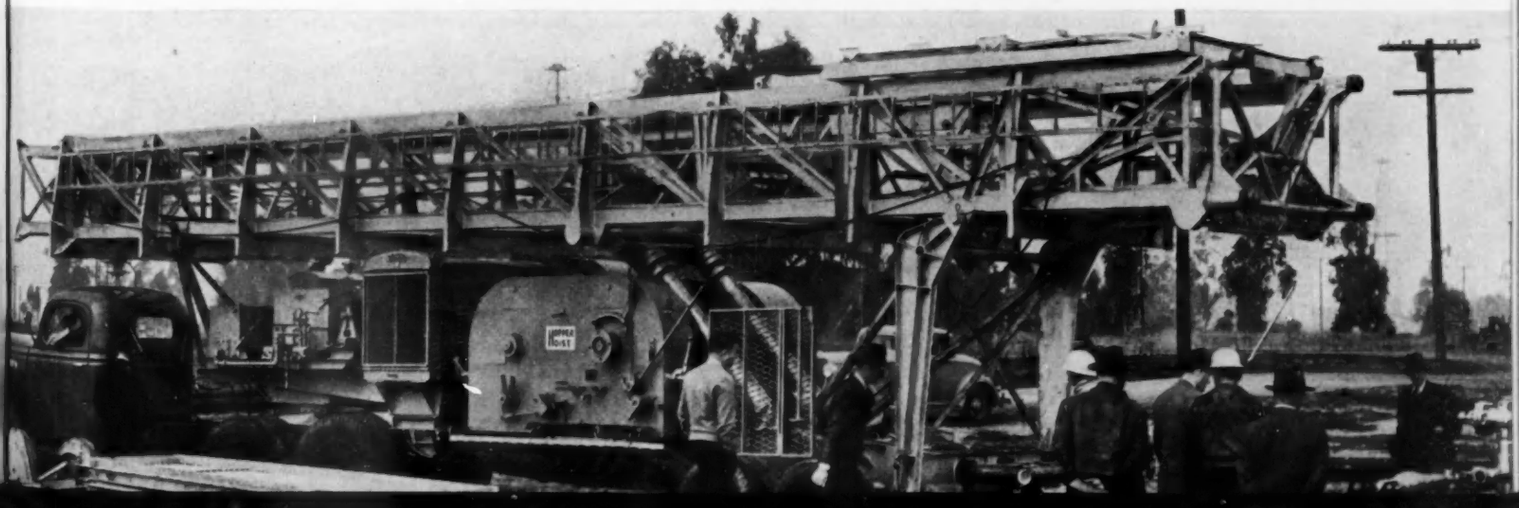

cosity of the mud and the wall building properties were also found acceptable. In all, it seems that silicate muds are the ideal answer to the chemically heaving shales if it were not for their high cost, difficult handling and their limited scope of application to non mechanically heaving problems. Thus far the problem of mechanical heaving by plastic flow has received no practical solution.

Montgomerie[20] has suggested that there are three types of chemically heaving shales for which a base exchange treatment proved satisfactory mainly by transforming the shales to Na-shales which are more easily controlled. According to Montgomerie a common heaving shale is a layer mixture of Na-Clay and Ca-Clay. When drilled, the water pressed out from the mud is taken up by Na-Clay which swells and becomes dispersed in the mud whereas the Ca-Clay does not disperse readily and is forced out of the hole, at times at such high speed that it can not be removed by circulation. The treatment consists in using sodium silicate, sodium chloride, sodium tannate, alkaline quebracho or cutch, the function of which is first, to repress swelling of the Na-Clay, second, to convert the Ca-Clay to a Na-Clay and, third, to precipitate calcium salts into the formation so as to hinder further penetration of water. The reactions are as follows:

1) $\text{Ca-shale} + Na_2SiO_3 = \text{Na-shale} + CaSiO_3$
2) $\text{Ca-shale} + \text{Na Tannate} = \text{Na-shale} + \text{Ca Tannate}$
3) $\text{Ca-shale} + 2NaOH = \text{Na-shale} + Ca(OH)_2$
$Ca(OH)_2 + \text{Quebracho} = \text{Gelatinous Ca Tannate}$

The same author reports success in treating heaving magnesium shales and aluminum shales. The latter ones are bauxite types of shales with low $\frac{SiO_2}{Al_2O_3}$ ratios and where the alumina is loosely bound. Sodium silicate is suggested as a reagent so as to form a gelatinous sheath. The writer has found no reference to such types of shales in the American literature.

2. *Mudding Off Producing Formations:*

The formation of a mud cake on the face of the producing formations is likely to hinder greatly the productivity of oil or gas not only due to the presence of the sheath but primarily due to the infiltration of water into the sand and formation of a capillary pressure wall which will oppose the movement of oil and gas.

Various remedies have been proposed:

1. The use of a detergent liquid which would break up the mud cake.

2. The use of raw rubber or latex in suspension with the mud. The rubber in contact with oil will swell and shatter the mud sheath.[21]

3. Recently a mud acid has been introduced on the market, which, it is claimed, will dissolve the bentonitic as well as the kaolinitic material of the mud without being unduly corrosive to the metal in the well. Reported results of well treatments indicate a very satisfactory performance. It is known that a corrosion inhibitor is added to the acid so that corrosion of steel is only about 2 percent as fast as the raw acid. Both a surface tension lowering agent and a de-emulsifying agent are used; the surface tension of the acid is brought to 29 dynes/cm thus increasing its penetrating power. The emulsion agent's purpose is to reduce the amount of cut-oil produced following treatment. Outside of this information, no technical information is available on the character of the acid.[22]

3. *Drilling Mud Logging:*

The logging of a well by means of measurements of various parameters of the circulating fluid while drilling may not exactly be classified as a problem of drilling. The subject is so new however that it may be well to consider some of its problems as related to drilling muds. The quantities measured are normally the gas content, the oil indication, the rate of penetration, the electrical conductivity of the mud, the rotating speed, the weight on the bit, the pump strokes, the torque, etc. For the strictly mud point of view the following points are of interest:

1. The traces of oil are observed by means of a fluoroscope. It is known that most crudes will fluoresce and, at times, phosphoresce when submitted to the influence of invisible ultra-violet rays. To this effect, samples of mud are placed in an enclosure provided with strong mercury lamps and the mud is visually observed for fluorescing traces of crude oil indicative that an oil horizon has been reached. The process is essentially discontinuous. It is said that the distinction between lubricating oils from machinery and crude oil is easily made by the general appearance of the emitted light.

2. The detection of traces of gas is made by deviating a small stream of the mud into an agitator where the gas is released mechanically and sucked into a hot wire gas combustion bridge. When no gas is present, the bridge, working on the Wheatstone bridge principle, is in equilibrium; if gas is present, the gas will burn in one leg of the bridge, generating a certain amount of heat which in turn will change the resistance of the leg and throw the bridge out of balance. The process of removal of the gas is open to objection since, as seen previously, a very high temperature alone can assure the removal of all the absorbed gas and since gas may also be released by virtue of base exchange, gas indications by the detector do not necessarily indicate that a gas sand has been encountered.

3. The measurement of the electrical conductivity of the mud is correlated with the penetration of salt water sands. This conclusion is again open to question as the electric conductivity of the mud is not only a function of the electrolytes in the mud but also of the colloidal state of the mud, the charges of the particles, the degree of dissociation, the type of ions dissociated, etc. Purely base exchange phenomena can register changes in the electrical conductivity of the mud, therefore there is reason to be careful in the correlation of drilling mud resistivity logs.

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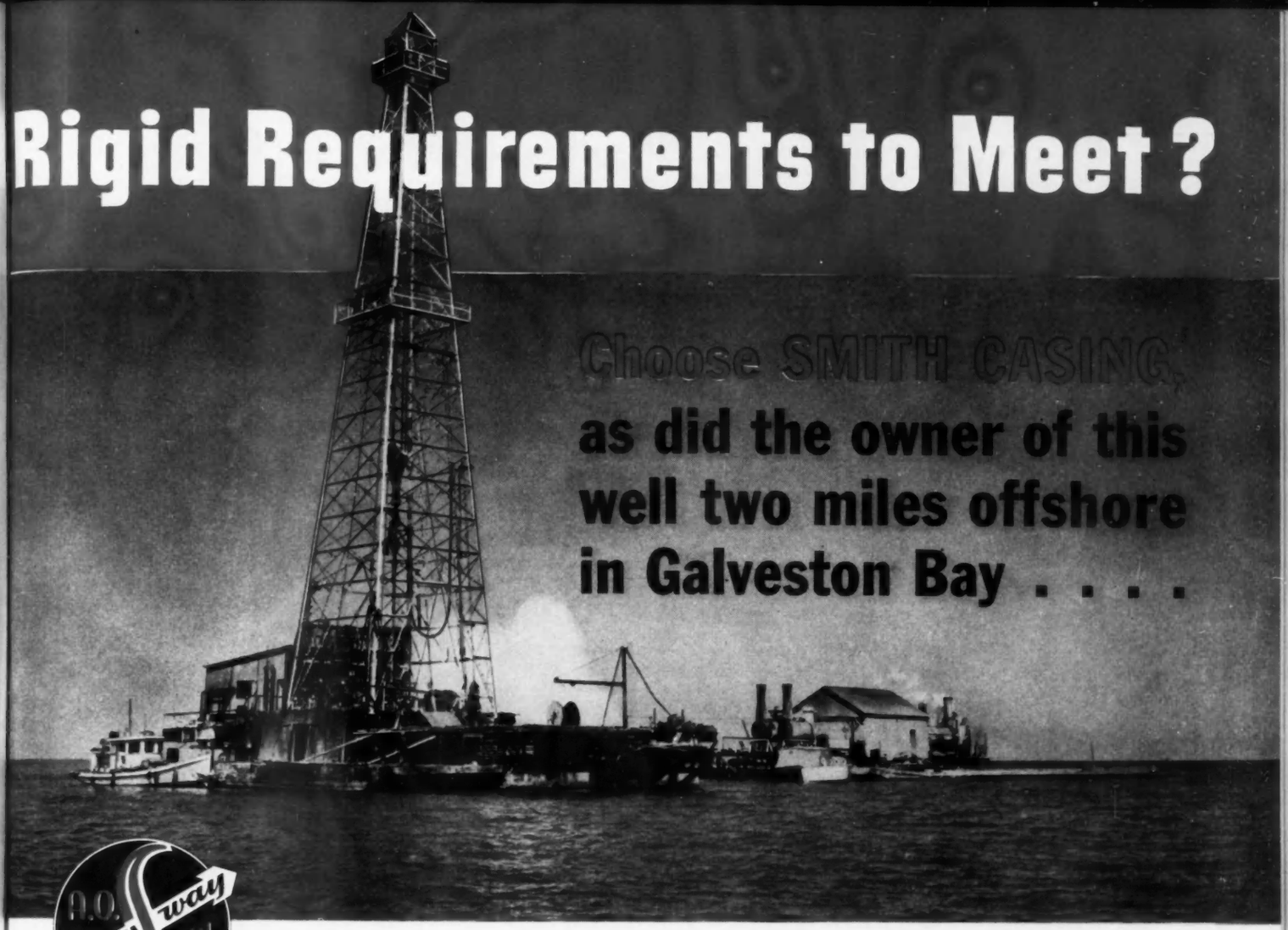
Rigid Requirements to Meet?



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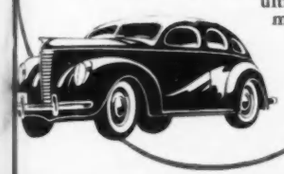
That A. O. Smith contributes materially to every major phase of the oil industry . . .

- by supplying a large portion of the casing used in production . . .
- by providing much of the line pipe used in transporting both crude and finished products . . .
- by making most of the high-pressure vessels used for refining . . .
- by producing most of the chassis frames for the automobiles that are ultimately your major market.



FACED with the rigid regulations under which oil is produced in coastal waters, in addition to the usual requirements of low purchase cost and low running cost without sacrifice of safety, the owner of this offshore well chose Smith Casing for the surface string. 2900′ of 10¾", 45.5# round thread Smith High Yield Casing were used.

Because Smith Casing has greater collapse resistance, you can use lighter weight and maintain the normal safety factor at less cost, or increase the safety factor without increase of weight or cost.

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Reworking Pays Dividends In South Texas Fields

By EARL S. POST

REWORKING has boosted the output and lessened water in many wells producing from the Government Wells and Loma Novia sands in northern Duval County. New methods are being employed, which apparently will reduce operating costs.

Hickok & Reynolds, operating a machine for themselves and under contract, have worked over dozens of tests ranging from 2400 to 2800 feet in the Seven Sisters and Loma Novia fields during the past few months. These projects have been under the direction of W. C. Sojourner, production superintendent.

Loma Novia sand in the field of the same name is a soft shaley formation, high in bentonetic content and muddy. The pressure is low and the movement of the fluid, due to the formation conditions, is slow. The result is that since the gas head has been dissipated, production in portions of the field has dropped to only a few barrels per well per day. More recently, a repressuring project has been placed into operation, providing further problems.

In reworking wells, these operators have followed a more or less set practice. A portable spudder type of rig is moved over the location and rods, tubing and remainder of the pumping unit is removed from the hole. The liner also is fished out and the well bailed down dry as possible. A sand pump type of bailing unit is used to remove all sand, shale, sediment, etc., from the hole. If there is an excessive amount of gas, the hole is filled with clean oil and the sand pump is worked at the bottom of the fluid load. No water is put in the hole at any time as the shale and bentonite content in the formation expands rapidly, thus requiring a greater amount of bailing to finally clear the formation.

In the portions of the field where the repressuring is being carried on, considerable mud has been moved through the formation and into the producing wells. In these instances, additional bailing is required to break down the zone and place it into condition for recompletion.

After the hole has been thoroughly cleared, clean gravel, about the size of a pea is placed in the well opposite the formation and into the casing about five feet above the setting point. If the bottom-hole pressure is sufficiently great to lift the fluid into the hole through this gravel, completion then is effected. A small amount of oil is poured into the hole and bailing resumed to remove any sticks or foreign particles which may have fallen into the hole while the gravel was being set. Tubing, working barrel and rods are rerun into the hole and the operation restored to production. If the well is making any bottom-hole water, this is frequently overcome by the lower portion of the gravel sanding up. The shale, bentonite and sand cement the gravel into an almost complete shut off. In several cases, wells making up to 60 percent water, have had this ratio reduced to 12 to 15 percent.

Wells having a low bottom-hole pressure are handled in a manner similar to the above, except that a perforated liner is driven through the gravel and into the bottom of the hole. The gravel inside of the liner is removed and the well completed in the usual manner. This leaves a complete gravel pack outside of the liner and between it and the producing formation. Wherein the well is making water, lead wool is pounded inside of the liner into the bottom of the hole. A similar cementation sets up around the base of the gravel and in the lead wool, thus cutting off much of the water.

The gravel used in this work is an ordinary clean, near round, stone about ⅜-to ½-inch in diameter. The gravel is delivered to these operators in three-yard lots and cleaned and sized. In order to obtain stones of a definite and relative size, the gravel is again run through a screen and washed, the loss being about 33-1/3 percent. Matching of size is vital, as liner perforations must not be clogged by these individual pieces of gravel.

These rework projects have been converting numerous low production wells in the field into profitable operations. The average increase in tests making from 4 to 6 barrels per day, along with considerable water, has been to from 21 to 24 barrels per day with a material lessening of water. In some cases, production has been raised to between 35 to 38 barrels.

The average period required for reworking wells is from two to three days, including pulling of pumping equipment, resetting and placing the operation back on production. The total cost ranges from $75 to $150. Calculating the increase in production, the project is repaid within several weeks.

The repressuring in the Loma Novia field is being done with gas from the Hoffman, Government Wells and other nearby pools. In some instances, the line pressure is sufficiently great that the gas can be merely turned into the input wells. Compressures are required in other instances. The project is expected to restore the formation pressure to near its original level.

The Loma Novia field has proved disappointing due to decline in production. The repressuring formation and completion of present wells by this new method, however, is expected to enable operators to gain a materially increased recovery from what appeared to be a near depleted reserve.

Reworking of wells in the Government Wells sand is not as intricate a project as in the Loma Novia zone. It is a cleaner sand with a water drive and does not contain the degree of foreign material found in the other level. The use of water in washing the wells in this horizon, therefore, does little or no damage. The actual workover is relatively the same as in the Loma Novia.

"WE CROSSED OUR FINGERS FOR MORE THAN 3 HOURS

. . . but that UNAFLO cement came out just as pretty as it went in!"

"EVERYTHING was O.K.," reports a superintendent of a deep outpost well in coastal Louisiana, "until we attempted to squeeze just above 9,000 feet. Bottom hole pressure was 4,400 pounds, and temperature above 200 degrees. We squeezed with 500 sacks of Unaflo and kept pumping Unaflo into the formation until the pump pressure reached 5,000 pounds. There were 235 sacks of Unaflo remaining in the tubing which had to be reversed out.

"When we reversed, all hell broke loose! The blowout preventer cut out and we just had to shut her down until we could get another pack-off out to the rig, put it on and tie down. *For three hours and fifteen minutes we kept our fingers crossed!* Then we began to empty the tubing. The UNAFLO flowed out of there just as easy as it went in!"

Anything can happen during a critical cementing operation. That's why so many operators *play safe* by using UNAFLO to protect their well investment. Try UNAFLO on your next job. For more details see the Composite Catalog of Oil Field and Pipe Line Equipment. Universal Atlas Cement Co. (United States Steel Corp. Subsidiary), Amicable Building, Waco; Tulsa; Oklahoma City; Kansas City; Chicago; and Birmingham.

AND HERE'S HOW TO SPEED UP SURFACE CEMENTING!

▶ *If you're looking for a way to save costly rig time without sacrificing safety and efficiency, your best bet is Atlas High-Early. It gains strength rapidly and thus speeds up cementing of surface and conductor pipe, and construction of rig foundations and cellars.*

OW-U-20

UNIVERSAL ATLAS OIL WELL CEMENTS

Practical Hints for the Drilling Rig

The following reports on rig practices contain suggestions of a practical nature, designed to improve operating efficiency and safety. These items come from all parts of the United States and give an excellent picture of the ingenuity being brought into play in drilling operations.

Contributions to this page will be paid for at the rate of $5 for each illustrated item accepted. Address contributions "The Editor, THE OIL WEEKLY, Houston, Texas."

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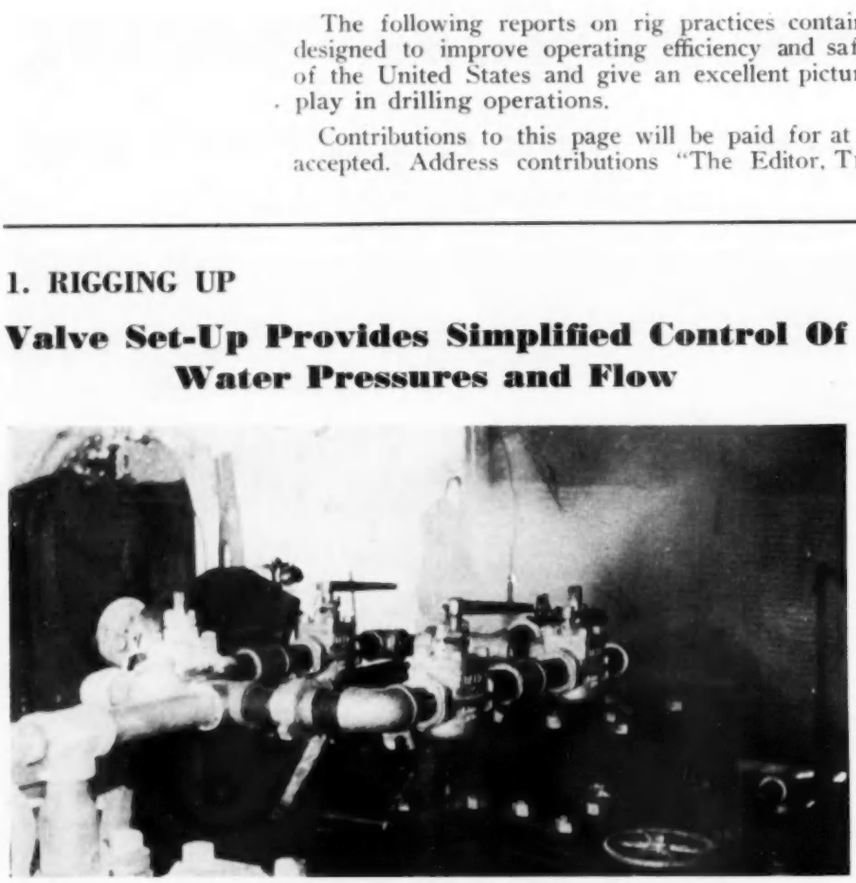
1. RIGGING UP

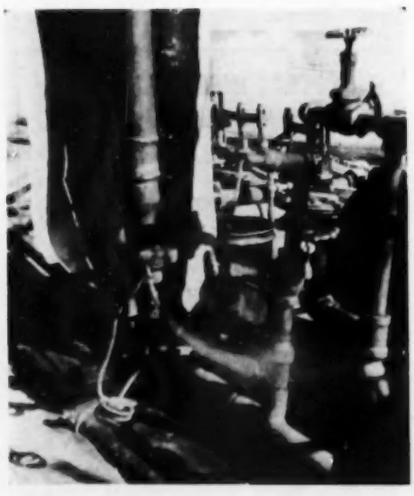
Valve Set-Up Provides Simplified Control Of Water Pressures and Flow



Simplified control of water pressures is secured through this elevated loop.

BY tying in the discharge lines from both feed-water pumps to a common loop or header, with valves each side of the two down drops connecting to boiler feed and water service lines, it is possible to compound both pumps for boiler filling service, or to put either pump on the boiler supply, with the other either idle or on service supply.

By using plug valves, with removable handles, it is possible to insure quick setting of desired water flow, and, with the handles in place, to indicate the valves being used. The loop, mounted at convenient hand height, permits quick manipulation of valves and streams, without danger of settings being changed accidentally.



Copper coil tapped to steam header serves as water and coffee heater.

2. GADGETS

Copper Coil Serves As Water Heater

A COIL made of ⅛-inch copper tubing, tapped in to the steam header on the boiler-feed pump skid, provides a quick means of heating water bath for bringing shake-out samples to the desired temperature. The coil is immersed in a bucket of water, steam is fed through the line and exhausted to the air, and the high heat conductivity of the tube quickly brings up the temperature of the water.

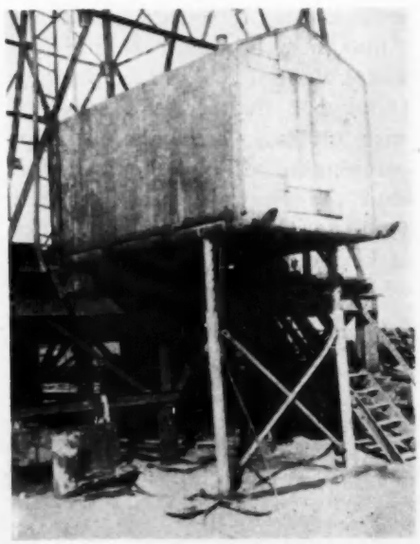
Between samples, the coil also serves the crew for heating coffee, and provides hot water uncontaminated by chemicals or oil.

3. RIGGING UP

Doghouse Convenient To Rig Workers

INSTEAD of building temporary wooden or sheet-steel shelters in a corner of the rig or under the roof covering the drawworks, one drilling contractor provides an all-steel doghouse for the drilling crew that can be raised to the derrick-floor level.

In order to make this combined



This doghouse is brought to derrick floor level for added convenience.

shelter, change room and supply room adaptable to varying conditions at each location, the rear of the structure is supported by two adjustable legs. Each leg consists of a length of 4-inch pipe that telescopes down into a lower section of 5-inch casing. Holes drilled at 4-inch intervals through the upper section of the leg permit adjustment to any height by running a bolt or short piece of sucker rod through the pipe and allowing it to set down on the top of the 5-inch section.

A cradle made of a narrow half-section of casing is welded to the top of each leg to form a firm support for skid-type bases of the steel shelter. A further means of insuring rigidity is employed in a removable X-brace of 2-inch pipe, flattened at the ends and bolted to ears welded to the lower sections of the legs.

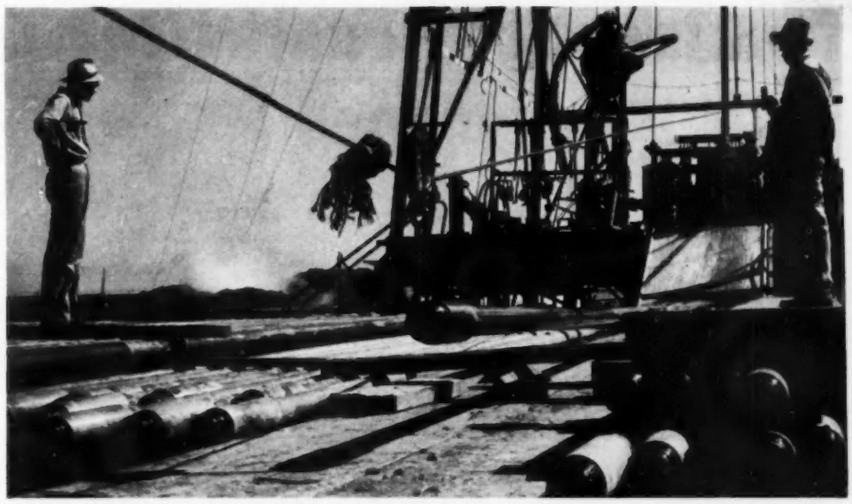
When moving from one location to another, the doghouse provides storage place for the gauges, indicators, V-belts and small hand tools that must be stripped from the equipment.

4. PIPE HANDLING

Gravity Movement To Storage Rack

BY rigging a heavy line from the derrick to an elevated support at the farther end of the pipe rack, it is possible to speed up the work of breaking down a drill stem considerably. A hook, mounted on a snatch-block riding the horizontal line, permits the outer end of the drill stem to be transported to a predetermined stop as fast as floor conditions will permit, it then being necessary only to unhook the joint and roll it across the skids to the pile or waiting truck.

Use of a buffer block on the line makes it necessary for the crew to handle the pipe only while at rest, with no damage sustained to pipe or equipment.



Snatch-block, hook and horizontal line permit gravity movement of a drill stem joint along storage rack as fast as the upper end is lowered by the elevators.

5. WATER SUPPLY

Derrick Tank Offers Auxiliary Supply

SUPPLEMENTING the normal water supply storage tanks used in drilling operations, one company makes it a practice to install an emergency 200-gallon tank in the rig when on locations at which there is no high-pressure water line connected.

Made of four 50-gallon drums welded end to end, the tall tank can be lifted easily with the sand line and set on a small platform clamped to the outside of an out-of-the-way corner of the rig just above the first girt.

Water from this tank is used principally for the hydraulic brake on the drawworks at times when the well is being drilled in with oil, when usually there is no water immediately available. It is used also for cleaning the floor, rotary table, drill pipe, and other miscellaneous or emergency uses when it would be necessary otherwise to go out and start the small water pump for each small need.

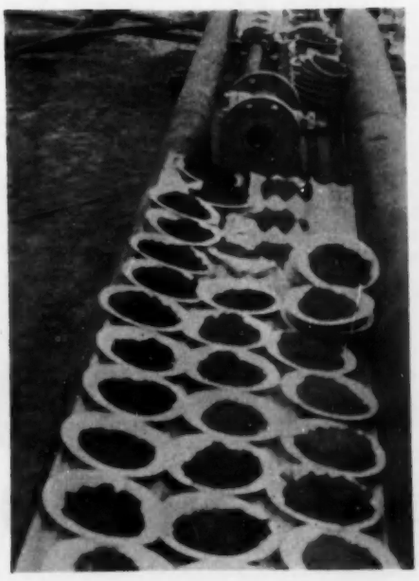
The tank, 10 feet or more above the derrick floor, provides more pressure than could otherwise be obtained on a high-floor rig.

An auxiliary water supply is provided by this tank mounted on the derrick.

6. MUD HANDLING

Plates Used to Dry Drill Cuttings

A CONVENIENT and inexpensive arrangement for drying separate samples of drill cuttings employs ordinary paper pie plates. Wide and shallow, cuttings can be spread out thin to dry quickly in the sun before they are placed in conventional cloth bags. Being light in color, pencil notations on the rims may be used to identify the depth from which they were obtained.



These paper dishes serve well for drying out drill cuttings before bagging.

Making Hole Faster In California With DIAMOND Equipped Cardwell Rigs

● As in all kinds of contract work, the experience of the contractor—and the efficiency and dependability of his equipment determine the profits.

● The drilling contractor is no exception—and successful and experienced ones know well the important part played by the roller chain drives on their rigs.

● They and leading manufacturers of drilling rigs and other oil field equipment have many years of proof that DIAMOND Roller Chains provide for long, dependable and efficient performance. DIAMOND chains are used wherever there are oil fields and have been first choice for many years both for original installations and replacements . . . For surer profits, longer life, fewer delays and lower maintenance costs, be sure you get DIAMOND Roller Chain Drives . . . DIAMOND CHAIN & MFG. CO., 485 Kentucky Avenue, Indianapolis, Indiana. Tulsa Office, 2238 Terwilleger Boulevard.

Directly below: **E. A. Bender, Bender Drilling Co., and Henry Brown of Brown Bros.**

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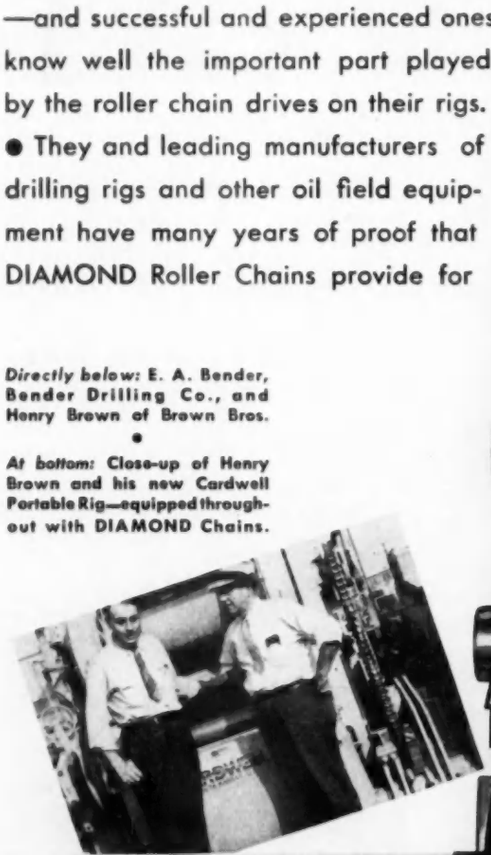
At bottom: **Close-up of Henry Brown and his new Cardwell Portable Rig—equipped throughout with DIAMOND Chains.**



Directly below: **Drilling and fishing with Cardwell Rig at Montebello, California.**

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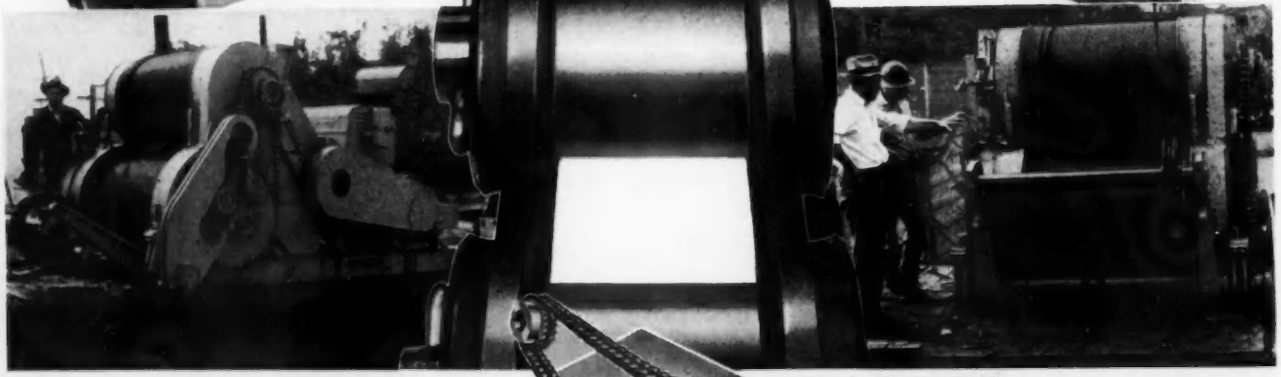
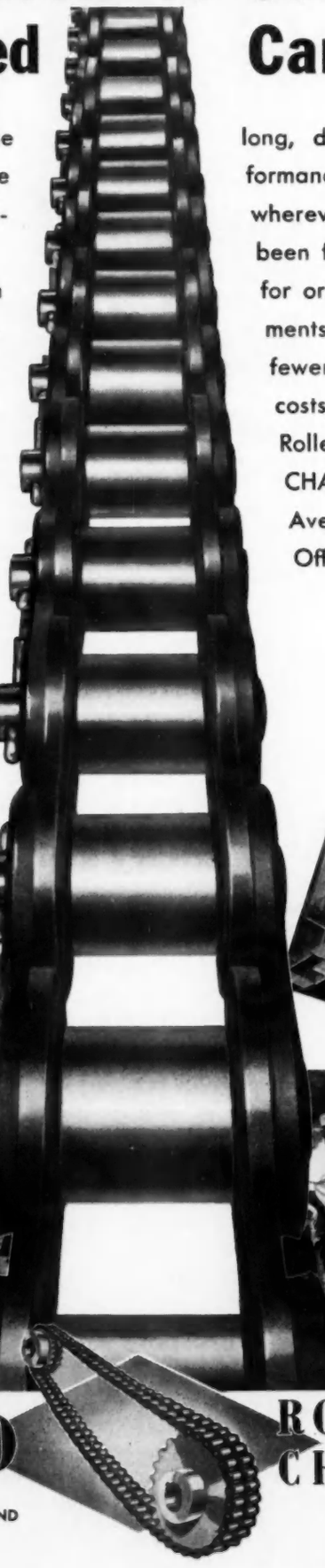
At bottom: **One of Cardwell Rigs purchased by Brown Bros.**





DIAMOND ROLLER CHAINS

Look for the DIAMOND on every link

HIGHLIGHTS IN THE WEEK'S NEWS

Washington

Justice Department Fails to Recommend Federal Control

Advocates of Federal control of the oil industry received a serious set-back last week when Asssistant Attorney General Thurman Arnold, appearing before the Temporary National Economic Committee February 12 to suggest legislative recommendations to be made in the final report of the TNEC, failed to offer any advice whatever as to the treatment which should be accorded petroleum.

Omission of any discussion of the oil situation was deliberate, it was learned later in other quarters, and was due to the belief of Department of Justice officials that any undesirable situation which exists in the industry will be adequately dealt with in the pending anti-trust suit and that no federal legislation on the subject is necessary.

The department's suit was filed in the District of Columbia Federal Court late last year, and responses now have been filed by practically all of the defendants, which included 22 major companies, their subsidiaries and affiliates, and the American Petroleum Institute. In its complaint, the government seeks reformation of production, marketing, refining and transportation practices of the industrv, and was deterred from asking for complete disintegration only by the strong opposition of the National Defense Advisory Commission, which warned that such a demand would create uncertainty in the industry that might react against the national defense program.

Arnold's position on the question of oil legislation was seen as a demonstration of faith in the ability of his anti-trust division, given adequate financial support, to deal with monopolistic problems in the major industries.

For the current fiscal year, the division has an appropriation of $1,325,000 for its law-enforcement work, as compared with only $413,000 for the fiscal year 1938, and expects to have even more for the coming year.

His recommendations to the TNEC called for an immediate program of anti-trust enforcement, directed particularly to the problem of eliminating restrictions upon the production of materials for the defense program, which in some instances are the direct result of foreign control of production in this country; a long-range program of anti-trust enforcement, and legislation to make enforcement more effective.

"Unquestionably, the anti-trust laws do not fill the entire economic picture," he told the committee. "It is sufficient here to observe that no ordinary social or economic legislation, or even emergency legislation, can be expected to work in an economy where the private seizure of arbitrary industrial power over production and distribution is permitted. Even laws which stabilize prices in particular fields will not be effective if arbitrary prices are being fixed by private groups without public responsibility."

Even with institution of a proceeding by the government against industries or groups which are operating in violation of the Sherman Act, results are achieved in the lowering of prices on commodities held under control, he said, expressing the belief that the department's activities have prevented price increases in oil, potash and nitrogen.

Legislation to improve enforcement, Arnold declared, should include an increase from $5000 to $50,000 in the maximum fine which may be levied against defendants convicted of violation of the Sherman Act. The present maximum, he argued, is "entirely inadequate" where large corporate enterprises are involved, as has been the case in many of the proceedings brought by the department.

Texas State Hearing Called February 24

The Texas Railroad Commission last week ordered a state-wide hearing in Austin February 24 to take testimony on which to base an allowable for March. Purcashers were instructed to file not later than February 20 definite nominations for March and approximate nominations for April, May, June, July and August.

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Legislation

Study Pipe Line Situation; Oklahoma Extends Compact

Attitude of the House interstate and foreign commerce committee with regard to President Roosevelt's recent request for an investigation of the Southeastern Pipe Line situation will depend upon a report to be made by Representative William P. Cole, Jr., chairman of the oil subcommittee, upon his return from the South, it was disclosed last week by Committee Chairman Clarence F. Lea.

Oklahoma became the first state to give final legislative approval to a bill extending the state's participation in the Interstate Oil Compact Commission. The Texas House refused to approve a bill making state conservation laws permanent, electing to delay action to provide a club that might provide industry acquiescence to bills for higher taxes. Other state legislative activity was routine, consisting principally of introduction of new bills.

Cole is now in Florida, recuperating from a recent illness, but will stop over in Georgia as he returns next week to get first-hand information regarding the interference with the construction of pipe lines in that state about which the president complained.

In a letter to Lea, Roosevelt called attention to the fact that "the completion of one gasoline pipe line and the commencement of another to the Southeastern states have been delayed by opposition from other carriers in interstate commerce." The situation was said to result from the opposition of the railroads in Georgia to the granting of right-of-way across their tracks to the pipe lines.

"If this problem, or the present controversy, is brought to our committee we will go into the matter thoroughly to learn whether or not federal legislation is necessary and desirable and, no doubt, propose legislation that we find appropriate," Lea said.

"At the present time, interstate gasoline pipe lines can be constructed without consent of the federal government," he pointed out in explaining the situation. "In order to construct such lines, the pipe line companies must, of course, secure such consent as may be required under the laws of the states affected. The federal government could by proper legislation grant permission for the construction of interstate pipe lines to serve as common carriers and authorize condemnation suits in furtherance of such purpose.

"If such procedure should conform to the general regulatory practice of the federal government, the pipe line companies would be required to secure a certificate of convenience and necessity from the authorized regulatory body. Before such a certificate was granted it would be necessary to make a showing before such federal agency to establish

the need of such a pipe line from the standpoint of public interest.

"Such a federal statute could, and probably would, grant to the pipe line carrier the right to bring condemnation proceedings to acquire the right-of-way for such lines.

"I take it as improbable that the federal government would grant the legal right to the construction of interstate pipe lines without giving some regulatory federal agency the right to decide whether or not the circumstances showed a need and justification from the standpoint of public interests for such lines."

At the present time, he said, the question of need undoubtedly would be considered from the standpoint of national defense, and would be a question to be taken into account in deciding whether a certificate should be granted.

Under the set-up outlined by Lea, any legislation to deal with the Georgia situation would apply to pipe lines generally, bringing all further additions to pipe-line mileage under the control of the federal government. However, he said, the committee will "endeavor to give consideration to the question with a view of determining what, if any, legislative remedy is available to meet the situation."

Secretary of the Interior Harold L. Ickes also discussed the pipe line situation at a press conference February 13, disclosing that he had requested the National Defense Advisory Commission to study construction of a crude line to connect the Mid-Continent field with the Eastern Seaboard.

"We found that if an emergency develops, we couldn't have sufficient pipe line connections between the Mid-Continent field and the Eastern seaboard," the secretary said.

Texas Wields Tax Threat

The Texas House last week indicated clearly that it intends to present the oil industry with a higher tax bill.

Last week when the first vote was called on a House bill to extend Texas proration laws permanently, Representative G. C. Morris moved that consideration of the bill be postponed until May 1. He declared there was a Social Security program to be paid for, and that he had promised to solve it by asking those best able to pay to assist in raising the money.

"The oil industry asks us to give it permanent security, to turn over to it the biggest axe we have to make them help us raise taxes," he said. "Before granting this economic security, I want them to help us raise some money. We can pass this law in 24 hours. Let's do something for the people first."

Apparently two-thirds of the membership agreed with Morris. Before the House recessed at noon, it had postponed until April 1 any further vote on this bill.

Meanwhile, the House committee on oil, gas and mining postponed indefinitely its hearings on two bills to provide for proration of distillate. They were set for hearing on February 13, but the postponement was ordered before hearing was held.

The House has created a general investigation committee similar to a Senate committee that has been in session for some time. Under provisions of a resolution creating the committee almost any phase of state government is subject to investigation. It is believed that one phase of its investigation will apply to the Texas Railroad Commission.

Meanwhile, the bill to create a new oil and gas commission languished in both the House and Senate. The House state affairs committee, where the bill rests now, was not organized until last week, and has set the bill for hearing on March 3. The House committee on oil, gas and mining has scheduled a public hearing for February 20, on the bill by Representative Favors, which would allow the use of sweet gas for manufacture of carbon black where no other market for the gas exists. This measure is being supported by a group from the Panhandle District, especially owners of gas land in that section of the field where pressures are so low that the pipe-line companies cannot afford to buy the gas.

State Proposals Varied

The Nebraska legislature has received a bill from Senator Walter Raecke, Central City, calling for a 2 percent severance tax on oil. Three percent of the revenue would go for administration of the act, with the balance to the state's temporary state school fund. The state's production, taken from the Falls City pool, approximates 2500 barrels a day.

As the deadline for introduction of bills was reached in Montana last week, notice was given for future introduction of a measure calling for a tax of 5 cents per 1000 feet of natural gas.

Drastic Pipe Line Bill

A new Indiana House bill would require all oil pipe lines to be six feet beneath the surface of the earth, and operated at pressures not exceeding 400 pounds with pumping stations not less than 20 nor more than 25 miles apart. The initial station on a line entering Indiana from another state would have to be within two miles of the state line. The bill further provides that pipe lines be patrolled twice a day, and that no person be assigned to patrol more than 10 miles of line. Operators would be required to file a $1,000,000 bond with the Indiana Public Service Commission.

The Kansas Independent Oil & Gas Association has announced opposition to bills pending in both branches of the Kansas legislature calling for repeal of the ratable taking provision of the state oil proration law. The bills were termed "detrimental to and against the best interests of the oil and gas industry of the state." Both houses received bills calling for a two-year extension of the Interstate Oil Compact agreement.

Arkansas' Governor Adkins last week explained that an administration bill to eliminate the college-graduate requirement for the office of state geologist was not drafted with the thought of ousting Dr. George C. Branner. The bill would eliminate requirements which the governor considers unnecessary for an appointee, and permit employment of a "practical geologist." The governor said he had an "open mind" regarding Dr. Branner and other key men retained from the preceding administration, and will be influenced by "just the results" they obtain.

A new Arkansas House bill, introduced by Representative C. C. Hollensworth, Warren, would levy a tax of 2 cents per 1000 feet of natural gas imported into the state. Gas companies would be required to absorb the tax, estimated by the bill's author to raise $1,000,000 a year.

Ask 10-Acre Spacing for South Charamousca Field

Magnolia Petroleum Company requested standard 10-acre spacing for wells in the South Charamousca field, Duval County, at a hearing before the Texas Railroad Commission last week.

Jack Woodward, petroleum engineer for the company, asked for straight acreage proration, with a maximum of 20 acres assignable to the final well on a lease.

Production is found in the Cole sand at 1600 feet, and there are five wells producing in the field.

Woodward requested an allowable of 30 barrels per well for each of these wells, following a plan recommended recently by Dr. F. V. L. Patten, director of production for the commission. Patten suggested that the commission allow 30 barrels for wells of this depth in new fields until more than five wells were producing.

The company requested 40 feet of surface casing cemented to the surface, and an oil string cemented 300 feet above the shoe. A. W. Baucum, petroleum engineer for The Texas Company, endorsed the program.

Ask 20-Acre Spacing for Green's Lake Field

Sun Oil Company requested standard 20-acre spacing for wells in the Green's Lake field, Galveston County, at a hearing before the Texas Railroad Commission last week.

There are 15 wells in the field, of which three are producing. The others have been either temporarily abandoned or plugged because of water encroachment. One well is drilling.

The oil is produced from Miocene sands found between 4000 and 6900 feet. There is an average porosity of 28 percent, but permeability is low for the Gulf Coast.

Byron Wiess, petroleum engineer for the company, said that sands in the field are unconsolidated, and for that reason, and because of water conditions, he recommended that production should be continuous on an allowable ranging between 60 to 100 barrels daily.

Wiess asked that the commission require 80 feet of conductor pipe cemented to the surface, 1500 feet of surface casing cemented to the surface, and an oil string cemented at least 500 feet above the shoe. The company asked for proration on acreage and per well, with 75 percent distributed on the acreage factor.

Sun Oil Company will buy the oil, and if the increase requested is granted, which was from 29 to 60 barrels per well, no reductions would be made in the company's purchases at other points in Texas.

Rio Grande Rules

Operating rules for the Rio Grande City field, Starr County, were issued by the Texas Railroad Commission last week. They call for one well to 10 acres, but wells may be drilled 220 feet from lease lines and 440 feet apart.

Proration is on acreage and per well, with 50 percent allocated on each factor. A maximum of 20 acres may be assigned to the final well on a lease. Rules provide for 30 feet of surface casing cemented to the surface, and an oil string cemented 600 feet above the shoe.

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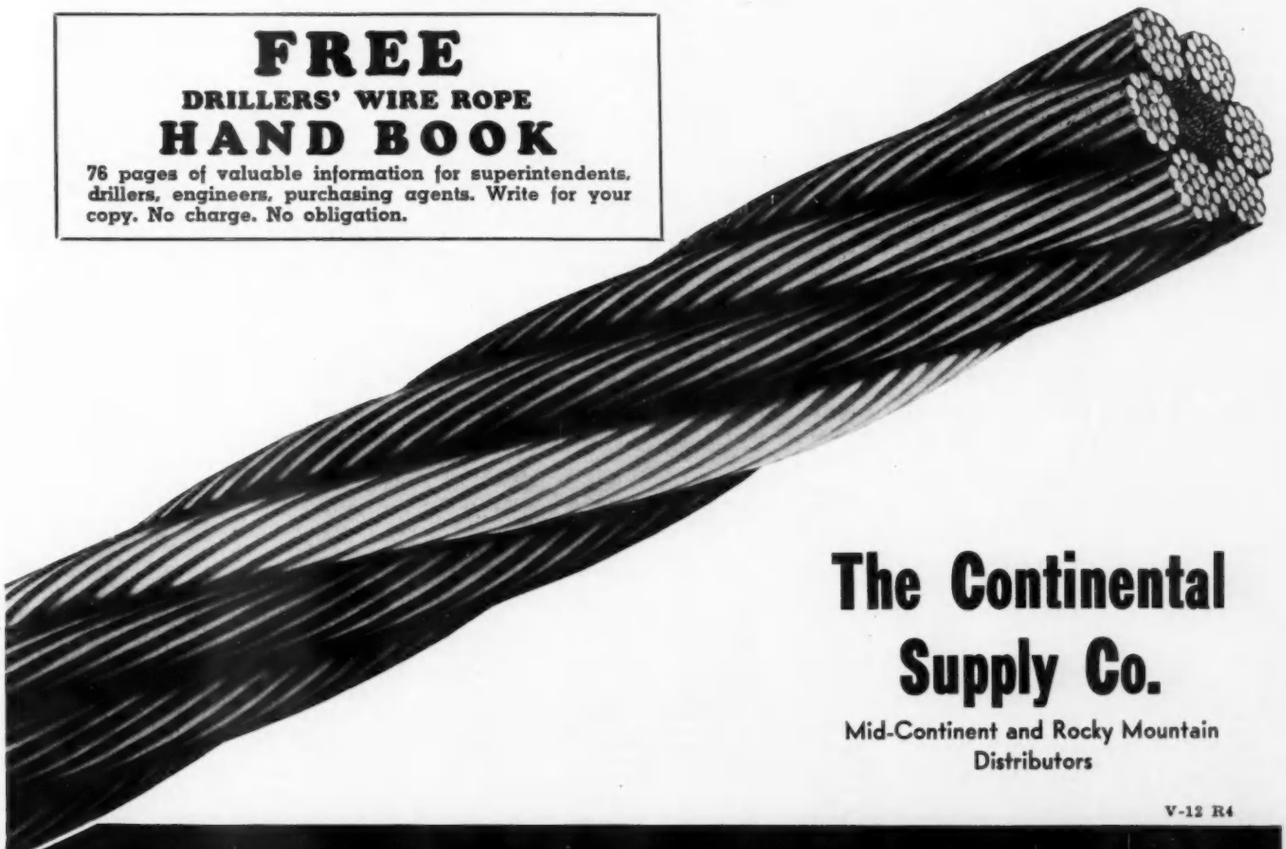

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"FLEX-SET" PREFORMED YELLOW STRAND

Trend Toward Record High In Processing Is Reversed

Latest statistics of the industry reveal the trend toward a new record high in the processing of crude oil was halted during the week ended February 8. Runs to stills during that period averaged 3,640,000 barrels daily, off 40,000 barrels from the previous week, and the first reversal during the past month. At its latest level, this quantity was 3.7 percent in excess of the same period a year ago, and is expected to increase in the next few weeks above the all-time peak of 3,690,000 barrels established in the week of June 22, 1940.

Despite a 27,000-barrel increase in the daily average production of crude oil and an exceptionally large addition to gasoline stocks, the statistical position of the industry retained its healthy tone. Although the crude processing rate has been generally 3 to 5 percent faster than in the early spring season a year ago, and additions to gasoline stocks have been heavy for the past month, the inventory of gasoline on February 8 was but 0.2 percent higher than that of a year ago.

Crude production for the week ended February 8, according to the American Petroleum Institute, averaged 3,617,650 barrels daily, or 1.9 percent less than for the same week a year ago. The United States Bureau of Mines crude oil inventory on February 1 was 261,208,000 barrels, an increase of 1,115,000 barrels on the previous check and the largest addition since November, 1940. Crude stocks at this level were 9.6 percent over those of a year ago. With this excess acting to retard increased allowables, and the high level of light fuel oil stocks acting to partially restrict runs to stills, the statistical picture reflects a sound position that should stand the moderate over production and heightened rate of processing expected in the next month.

Industrial drain on heavy fuel oils, much of it attributable to defense projects, amounted to 507,000 barrels, bringing the inventory at February 8 to 99,921,000 barrels, 2.8 percent less than that of a year ago. Moderation of cold weather decreased the net withdrawal of lighter fuel oil and distillate fuel stocks to 925,000 barrels, making the inventory at February 8, according to the American Petroleum Institute, 36,709,000 barrels.

Net addition to gasoline stocks was 2,401,000 barrels, largest weekly increase in the past few months. With current inventory at 93,265,000 barrels, the industry had only 0.2 percent more on hand than a year ago, when there was much attention given to possible means of reducing what was then considered an unwholesome level.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[8]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[1]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,373,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941						
January 4	3,367,200	3,600,000	260,643,000	85,530,000	42,606,000	102,563,000
January 11	3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 1	3,590,150	3,680,000	261,208,000	90,864,000	37,634,000	100,428,000
February 8, 1941	3,617,650	3,640,000	.....	93,265,000	36,709,000	99,921,000
February 8, 1940	3,688,100	[3]3,509,000	[4]238,380,000	93,055,000	26,007,000	102,798,000
Change in past year.	—1.9%	+3.7%	+9.6%	+0.2%	+41.2%	—2.8%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, February 3, 1940.
[5] Lowest since October, 1922, due to shut down of six mid-continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] February, 1940, daily average.

Production Gains 45,600 Barrels to Exceed Demand

United States production of crude oil averaged 3,658,000 barrels daily during the week ended February 15. This was 45,600 barrels above the rate of the previous week, and 29,100 barrels in excess of the demand for domestic crude forecast by the United States Bureau of Mines. The eight prorated states exceeded the aggregate conservation quota by 29,450 barrels daily.

Kansas, Illinois and California were responsible for the national increase, with moderate gains offset only partly by a decline in Oklahoma. Texas and other major areas were stable, as there was no change in blanket proration orders posted at the first of the month.

Texas output averaged 1,345,850 barrels daily, up 1450 barrels from a week ago. Federal recommendation for February allotted the state 32,950 barrels less. California registered a 13,800-barrel increase, climbing to 628,800 barrels daily, or 57,800 barrels daily over the self-imposed conservation quota and 33,100 barrels above bureau prediction.

Gasoline, Lube Unchanged; Schuler Crude Up

Local weaknesses in the refined products markets developed during the past week, mainly in the New York area, where kerosene, light fuel oils, and diesel oils suffered a drop. Other changes were in the Gulf Coast region, where the minimum quotation for 60-octane unleaded gasoline was advanced ⅛ cent, while minimum quotation on diesel oil was lowered 10 cents. In the Los Angeles harbor market, the diesel range was dropped 10 cents. Oklahoma, Mid-Western and Western Pennsylvania markets were unchanged. Market for light fuel oils showed a tendency toward weakness, with some Oklahoma refiners reduced quotations ⅛ to ⅜ cent, with milder weather being responsible. Gasoline movement generally was heavy, with no change in price.

Western Pennsylvania operators continued to feel the scarcity of bright stock and neutral oils, with quotations being advanced ½ cent in some quarters on the former product.

Executives and traffic managers of the Petroleum Rail Shippers Association laid plans for their action on Interstate Commerce Commission treatment of their complaint against "discriminatory" transportation charges. While the association expected commission action, due about March 5, would be favorable, it was intimated that an adverse decision would meet with concerted protest. The rail shippers filed the complaint because of concern over water competition.

Crude price changes during the week were anticipated rather than actual, as reports from two areas indicated that prices will be revised upward in the future. Root Petroleum Company announced that a price cut of last September 15 on Schuler crude, Union County, Arkansas, will be restored. The increase will be 4 to 10 cents per barrel, effective April 1, to meet prevailing prices in the field. The new postings

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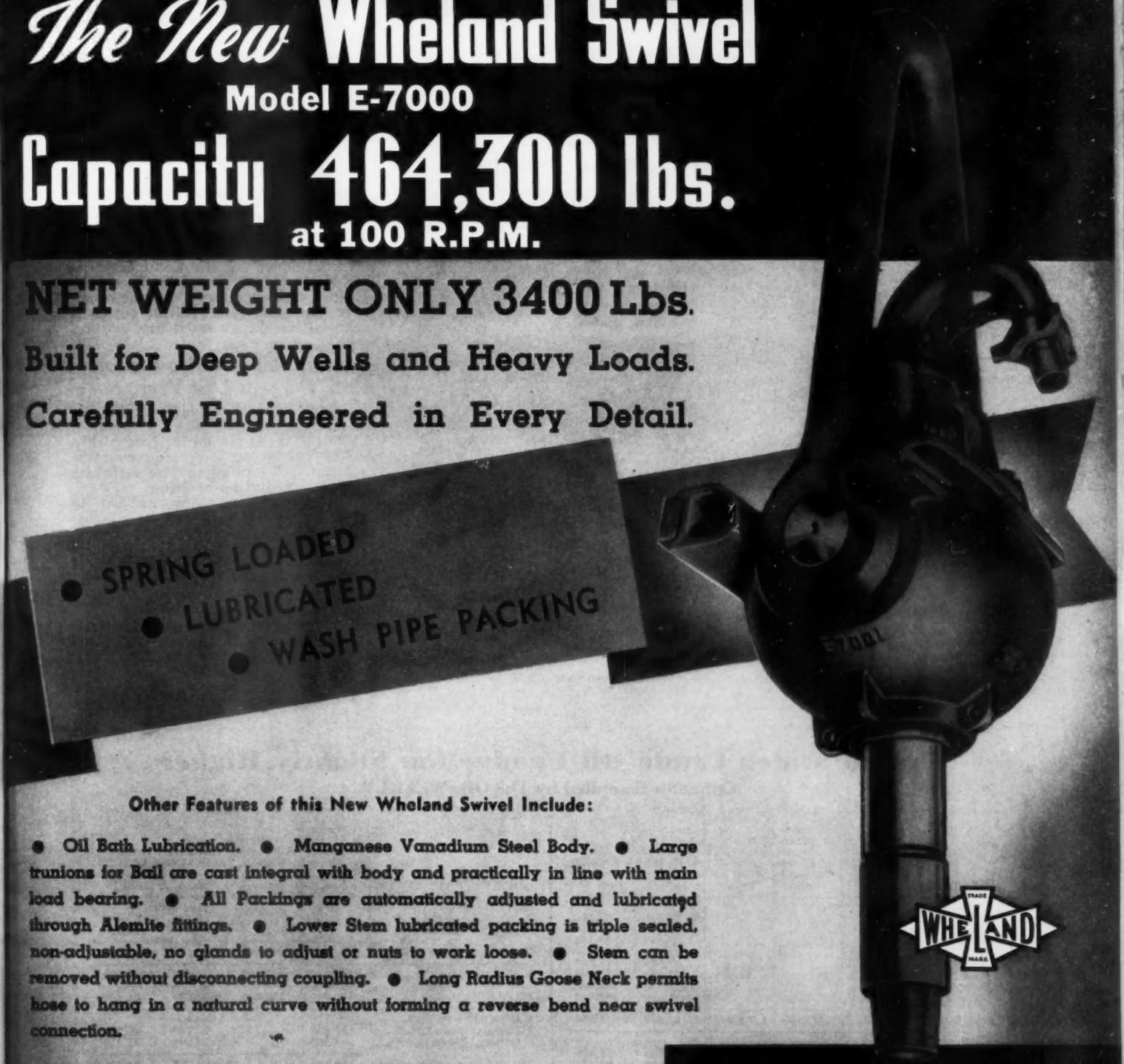

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SPECIFICATIONS:

Stem diameter above coupling....7¼"
Diameter of trunions.....6½"
Timken true apex 19"x9"x4⅛" Main Load Bearing
Timken upper thrust bearing
American Lower alignment bearing
Length over all inside of bail, Less lower coupling.....86½"
Width across trunnions over all 32¼"

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Chattanooga, Tenn.

are for Schuler sweet crude, Reynolds lime, and Jones sand. Beginning with 40-gravity, the increase will be four cents per barrel, from 85 and 89 cents for Reynolds lime and Jones sand crudes to 99 cents for Schuler sweet crude. There is a one-cent differential on both schedules down to 34 gravity, while from 34 to 25 gravity the increase is 10 cents straight.

Reports from Wyoming state that Lance Creek crude is expected to be raised to 90 cents per barrel before July 1 as result of moves undertaken a year ago by the Secretary of the Interior to bring about an increase in price of government oil produced in the field. Present price of Lance Creek crude is 77 cents per barrel, established several years ago, with a 25-cent differential under the Mid-Continent price for 36-gravity oil, placed in effect when Lance Creek operators sought new markets. This differential will be cut to 12 cents under the expected new posting.

Wholesale Prices of Refined Products

	Range Last week (Cents a gal.)		Changes from week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and under	3¾	4¼	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
Mid-Western Tank Car:				
60 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
New York Harbor:				
68-70 Octane	5⅛	5½	...	...
72-74 Octane	5½	6⅞	...	+⅛
Gulf Coast:				
60 Octane unleaded	3⅞	4	+⅛	...
65 Octane unleaded	4	4¼	...	...
72-74 Octane leaded	4	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	2⅝	2⅝	...	...
F.O.B. Breckenridge, Tex.	2	2	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4	4¼	...	...
42-44 water white	4⅛	4⅜	...	...
Mid-Western Tank Car:				
41-43 water white	4⅛	4¼	...	...
42-44 water white	4¼	4⅜	...	...
New York Harbor	4⅞	5⅜	—¼	...
RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market, Group 3, basis	3⅞	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3½	3⅞	...	...
No. 3	3⅜	3½	...	...
Mid-Western Tank Car:				
No. 1 white	3⅞	4	...	...
No. 3	3¼	3½	...	...
New York Harbor:				
No. 1	4⅞	5⅜	—¼	...
No. 3	4⅜	4⅞	—¼	...

	Range Last week (Per Bbl.)		Changes from week Before	
HEAVY FUEL OILS				
Oklahoma Refineries:				
No. 6	$0.65	$0.65	...	...
Mid-Western Tank Car:				
No. 5	.75	.85	...	...
No. 6	.55	.60	...	...
New York Harbor:				
No. 5	1.55	1.55	...	...
No. 6	1.25	1.25	...	...
BUNKER C FUEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$ .80	$ .85	...	...
New York Harbor	1.25	1.25	...	...
DIESEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$1.40	$1.70	—.10	...
New York Harbor	1.75	1.75	—.10	—.10
Los Angeles Basin, 27 gravity	1.20	1.26	...	...
LUBRICATING OIL				
(Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	13	15½	...	...
Neutral oil, pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	8	10¼	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	14	14	...	...
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	19	20	...	...

Bureau Reports Production Up 7 Percent Last Year

United States oil production hit a new all-time high in 1940 with an output of 1,351,847,000 barrels, an increase of 87,500,000 barrels, or 7 percent, over the 1939 total, according to first estimates of the U. S. Bureau of Mines.

The preliminary figure, subject to later correction, was announced last week by the bureau in its final production report for the year, placing December output at a daily average of 3,565,200 barrels, compared with 3,563,500 barrels in November and 3,714,000 barrels in December, 1939.

Total production for the month was 110,520,000 barrels, against 106,904,000 barrels in November and 115,120,000 barrels in December of the preceding year.

No material changes in daily average

United States Crude Oil Production Slightly Higher

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 8	Feb. 15
TEXAS—				
Texas Panhandle	.....	.....	73,800	67,500
North Texas	.....	.....	101,100	101,150
West Central Texas	.....	.....	29,900	30,200
West Texas	.....	.....	238,300	235,200
East Central Texas	.....	.....	72,500	71,800
East Texas Field	.....	.....	375,800	375,100
South Texas	.....	.....	201,400	205,000
Texas Gulf Coast	.....	.....	251,600	259,900
Total Texas	1,312,900	1,318,873*	1,344,400	1,345,850
CALIFORNIA—				
Long Beach	.....	.....	41,800	41,900
Midway-Sunset	.....	.....	55,600	55,300
Kettleman Hills	.....	.....	35,500	39,400
Wilmington	.....	.....	83,500	85,500
Others	.....	.....	398,600	406,700
Total California	595,700	571,000†	615,000	628,800
OKLAHOMA—				
Oklahoma City	.....	.....	100,350	87,100
Seminole Area	.....	.....	104,925	106,150
Others	.....	.....	213,325	214,400
Total Oklahoma	442,500	400,000	418,600	407,650
ILLINOIS—				
Salem	.....	.....	109,500	108,300
Louden	.....	.....	63,200	70,000
Centralia	.....	.....	13,300	13,700
Other New Pools	.....	.....	120,500	128,500
Old Pools	.....	.....	11,400	11,100
Total Illinois	342,100	.....	317,900	331,600

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 8	Feb. 15
LOUISIANA—				
North Louisiana	.....	.....	69,200	69,100
South Louisiana	.....	.....	224,600	225,750
Total Louisiana	288,600	294,942	293,800	294,850
KANSAS	193,200	196,200	177,500	203,100
NEW MEXICO	100,700	106,000	102,500	101,000
EASTERN STATES—				
Pennsylvania Grade	50,000	.....	72,100	66,950
Others, Eastern	49,300	.....	20,600	27,350
Total Eastern States	99,300	.....	92,700	94,300
MOUNTAIN STATES—				
Wyoming	74,600	.....	75,100	75,200
Montana	20,000	.....	18,500	18,500
Colorado	3,900	.....	3,600	3,650
Total Mountain States	98,500	.....	97,200	97,350
MICHIGAN	47,500	40,000§	40,100	40,150
INDIANA	22,500	.....	20,200	20,350
ARKANSAS	66,100	69,969	70,700	70,750
MISSISSIPPI	16,100	.....	19,350	19,500
NEBRASKA	3,200	.....	2,450	2,750
‡Total 8 Prorated States	3,047,200	2,996,984	3,062,600	3,092,150
Total United States	3,628,900	.....	3,612,400	3,658,000

***Estimated net basic daily allowables as of February 1. Railroad Commission estimates that actual production normally is about 3 percent under the allowable. But allowable normally increases as new wells are completed. Under February-March order, most Texas fields were ordered shut down February 1, 2, 8, 9, 15, 16, 22, 23 and 28; March 2, 8, 9, 15, 16, 22, 23, 29, 30 and 31. Texas Panhandle was ordered shut down February 2, 9, 15, 16, 23 and 28; March 2, 9, 15, 16, 23, 30 and 31.**

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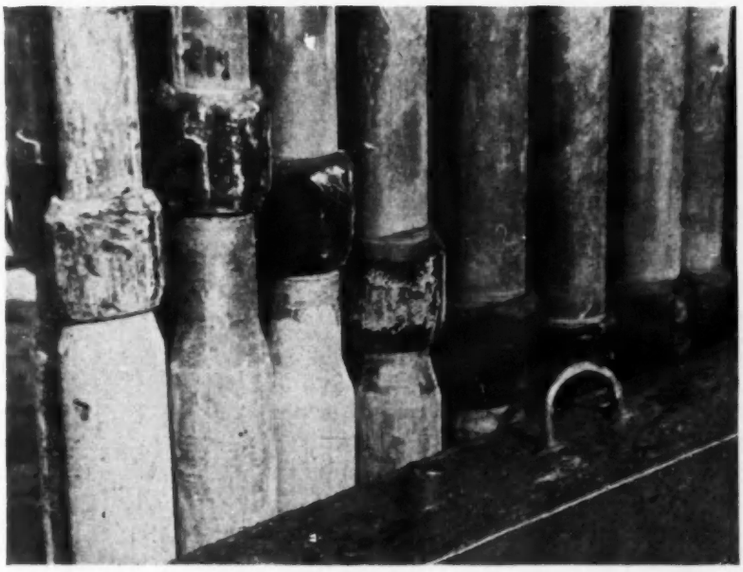
Another typical performance record by PATTERSON-BALLAGH PROTECTORS



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are for Schuler sweet crude, Reynolds lime, and Jones sand. Beginning with 40-gravity, the increase will be four cents per barrel, from 85 and 89 cents for Reynolds lime and Jones sand crudes to 99 cents for Schuler sweet crude. There is a one-cent differential on both schedules down to 34 gravity, while from 34 to 25 gravity the increase is 10 cents straight.

Reports from Wyoming state that Lance Creek crude is expected to be raised to 90 cents per barrel before July 1 as result of moves undertaken a year ago by the Secretary of the Interior to bring about an increase in price of government oil produced in the field. Present price of Lance Creek crude is 77 cents per barrel, established several years ago, with a 25-cent differential under the Mid-Continent price for 36-gravity oil, placed in effect when Lance Creek operators sought new markets. This differential will be cut to 12 cents under the expected new posting.

Wholesale Prices of Refined Products

	Range Last week (Cents a gal.)		Changes from week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and under	3¾	4¼	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
Mid-Western Tank Car:				
60 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
New York Harbor:				
68-70 Octane	5½	5½	...	...
72-74 Octane	5½	6⅞	...	+⅛
Gulf Coast:				
60 Octane unleaded	3⅞	4	+⅛	...
65 Octane unleaded	4	4¼	...	...
72-74 Octane leaded	4	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	2⅝	2⅝	...	...
F.O.B. Breckenridge, Tex.	2	2	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4	4¼	...	...
42-44 water white	4⅛	4⅜	...	...
Mid-Western Tank Car:				
41-43 water white	4⅛	4¼	...	...
42-44 water white	4¼	4⅜	...	...
New York Harbor	4⅞	5⅜	—¼	...
RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market, Group 3, basis	3⅞	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3½	3⅞	...	...
No. 3	3⅜	3½	...	...
Mid-Western Tank Car:				
No. 1 white	3⅞	4	...	...
No. 3	3¼	3½	...	...
New York Harbor:				
No. 1	4⅞	5⅜	—¼	...
No. 3	4⅝	4⅞	—¼	...

	Range Last week (Per Bbl.)		Changes from week Before	
HEAVY FUEL OILS				
Oklahoma Refineries:				
No. 6	$0.65	$0.65	...	...
Mid-Western Tank Car:				
No. 5	.75	.85	...	...
No. 6	.55	.60	...	...
New York Harbor:				
No. 5	1.55	1.55	...	...
No. 6	1.25	1.25	...	...
BUNKER C FUEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$ .80	$ .85	...	...
New York Harbor	1.25	1.25	...	...
DIESEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$1.40	$1.70	—.10	...
New York Harbor	1.75	1.75	—.10	—.10
Los Angeles Basin, 27 gravity	1.20	1.26	...	...
LUBRICATING OIL				
(Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	13	15½	...	...
Neutral oil, pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	8	10¼	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	14	14	...	...
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	19	20	...	...

Bureau Reports Production Up 7 Percent Last Year

United States oil production hit a new all-time high in 1940 with an output of 1,351,847,000 barrels, an increase of 87,500,000 barrels, or 7 percent, over the 1939 total, according to first estimates of the U. S. Bureau of Mines.

The preliminary figure, subject to later correction, was announced last week by the bureau in its final production report for the year, placing December output at a daily average of 3,565,200 barrels, compared with 3,563,500 barrels in November and 3,714,000 barrels in December, 1939.

Total production for the month was 110,520,000 barrels, against 106,904,000 barrels in November and 115,120,000 barrels in December of the preceding year.

No material changes in daily average

United States Crude Oil Production Slightly Higher

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 8	Feb. 15
TEXAS—				
Texas Panhandle	.....	.....	73,800	67,500
North Texas	.....	.....	101,100	101,150
West Central Texas	.....	.....	29,900	30,200
West Texas	.....	.....	238,300	235,200
East Central Texas	.....	.....	72,500	71,800
East Texas Field	.....	.....	375,800	375,100
South Texas	.....	.....	201,400	205,000
Texas Gulf Coast	.....	.....	251,600	259,900
Total Texas	1,312,900	1,318,873*	1,344,400	1,345,850
CALIFORNIA—				
Long Beach	.....	.....	41,800	41,900
Midway-Sunset	.....	.....	55,600	55,300
Kettleman Hills	.....	.....	35,500	39,400
Wilmington	.....	.....	83,500	85,500
Others	.....	.....	398,600	406,700
Total California	595,700	571,000†	615,000	628,800
OKLAHOMA—				
Oklahoma City	.....	.....	100,350	87,100
Seminole Area	.....	.....	104,925	106,150
Others	.....	.....	213,325	214,400
Total Oklahoma	442,500	400,000	418,600	407,650
ILLINOIS—				
Salem	.....	.....	109,500	108,300
Louden	.....	.....	63,200	70,000
Centralia	.....	.....	13,300	13,700
Other New Pools	.....	.....	120,500	128,500
Old Pools	.....	.....	11,400	11,100
Total Illinois	342,100	.....	317,900	331,600

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 8	Feb. 15
LOUISIANA—				
North Louisiana	.....	.....	69,200	69,100
South Louisiana	.....	.....	224,600	225,750
Total Louisiana	288,600	294,942	293,800	294,850
KANSAS	193,200	196,200	177,500	203,100
NEW MEXICO	100,700	106,000	102,500	101,000
EASTERN STATES—				
Pennsylvania Grade	50,000	.....	72,100	66,950
Others, Eastern	49,300	.....	20,600	27,350
Total Eastern States	99,300	.....	92,700	94,300
MOUNTAIN STATES—				
Wyoming	74,600	.....	75,100	75,200
Montana	20,000	.....	18,500	18,500
Colorado	3,900	.....	3,600	3,650
Total Mountain States	98,500	.....	97,200	97,350
MICHIGAN	47,500	40,000§	40,100	40,150
INDIANA	22,500	.....	20,200	20,350
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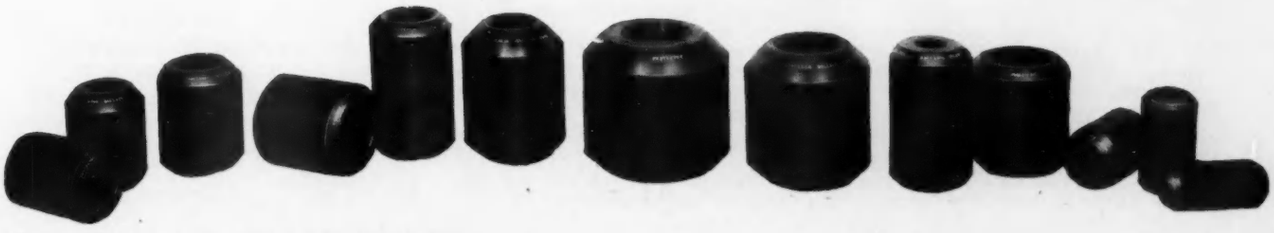


output were recorded in any of the producing states, the bureau reported. Production in Illinois and California declined slightly and in spite of a gain in the Panhandle, the average for Texas dropped about 10,000 barrels from November. On the other hand, Oklahoma registered a slight increase.

Foreign Trade a Factor

"The balance of supply and demand in December was hinged on foreign trade, an increase in imports and a decline in exports resulting in a gain of about 900,000 barrels in crude stocks compared with a decline of about 700,000 barrels in November," the bureau commented.

"Stocks of all oils were drawn on to the extent of 2,870,000 barrels in December, but for the year there was a net gain of about 39,000,000 barrels, which brought the total to 563,954,000 barrels on December 31, 1940."

Reviewing the month, the bureau found that the yield of gasoline continued to decline, the average being 43.1 percent compared with 43.4 percent in November, but the gas oil-distillate yield increased 0.8 percent, to 15.1, and the residual yield 0.7 percent, to 25.5, both at the expense of asphalt and other products.

"The domestic demand for motor fuel in December was 46,413,000 barrels, up 6 percent over a year ago; the annual total was 589,424,000 barrels, also a gain of 6 percent over 1939," the report stated. "Exports of motor fuel for December and 1940 were 1,983,000 and 25,107,000 barrels, respectively, these being decreases of 37 and 44 percent, respectively, from the corresponding periods of a year ago. Stocks of finished gasoline increased about 4,500,000 barrels in December, bringing the level to 77,943,000 barrels on December 31. This was between 500,000 and 600,000 barrels above the amount on hand a year ago, but in terms of days' supply was below last year's level.

"The domestic demand for gas oil and distillate fuel oil was 16 percent above last December, that for residual fuel oil was up 8 percent. Stocks of the former were about 9,000,000 barrels above a year ago, of the latter about 3,000,000 barrels below."

Exports Drop

Due to a reduction in exports and transfers to regular gasoline, stocks of aviation gasoline increased during December in spite of the fact that production dropped from 1,386,000 barrels in November to 1,340,000 barrels in the final month, the report disclosed.

Exports dropped from 535,000 to 497,000 barrels, and transfers to regular gasoline from 344,000 to 270,000 barrels. Domestic demand increased from 443,000 to 494,000 barrels, but 79,000 barrels were added to stocks, making the year-end total 6,285,000 barrels compared with 2,771,000 barrels at the close of 1939.

Comapartive figures for 1939 were lacking because the bureau did not begin to take aviation gasoline separately until last year, but total 1940 production was given as 12,451,000 barrels; transfers to regular gasoline, 723,000 barrels; exports, 4,295,000 barrels against 4,234,000 barrels in the preceding year, and domestic demand, 5,368,000 barrels.

The Bureau of Labor Statistics placed the price index for petroleum products in December at 49.5, compared with 49.3 in November and 52.5 in December of the previous year. The crude-oil capacity represented in the report was 4,294,000 barrels, giving an operating ratio of 82 percent the same as in November, compared with 81 percent in December, 1939.

Natural Gasoline Production Gains Sharply in 1940

Natural gasoline production in 1940 totaled 2,320,458,000 gallons, compared with 2,169,300,000 gallons in 1939, a daily average of 6,340,000 gallons against 5,943,000 gallons, it was reported February 13 by the United States Bureau of Mines.

December production, the bureau announced, totaled 207,900,000 gallons against 203,322,000 gallons in November, giving a daily average of 6,706,000 gallons against 6,777,000 gallons due to declines in the East Texas, Texas Gulf and Oklahoma City districts.

Stocks continued to decrease, those at refineries dropping from 126,798,000 to 119,238,000 gallons, and those at plants and terminals from 129,486,000 to 120,330,000 gallons during the month, it was stated. The total of 239,568,000 gallons at the close of the year, however, was materially in excess of the 185,682,000 gallons reported at the end of 1939.

Michigan Order Encourages Wildcat Exploration

To encourage wildcatting and clarify its policy, the Michigan State Oil Advisory Board last week issued a memorandum that wildcat wells will not be prorated until after production commensurate with reasonable discovery rights has been obtained. P. J. Hoffmaster, supervisor of wells, said, however, that wildcat wells must be produced in accordance with good practice and without waste.

Suggestions that the memorandum state a definite amount of oil as exempt from proration, or a definite number of wells that could be drilled in a new field before coming under proration, were rejected.

No action was taken on proposals to change the method of proration from the present lease basis to an individual well or unit plan. Final action is expected when the board meets March 10.

Hoffmaster said he hoped the memorandum would remove any existing fears that he or the board anticipated "clamping down" on a field when and if discovered. He pointed out that none of the fields discovered in 1940 were ever placed under proration.

Texas Hearings

The Texas Railroad Commission has scheduled a hearing for February 20 to consider revising rules for the Wasson field, Gaines and Yoakum counties, to fixing a minimum potential or minimum allowable for pumping wells in the field.

At another hearing February 20, the commission will hear the application of operators in the Clara Driscoll field, Nueces County, for exemption from shutdowns. Exemption would apply to wells producing from the 3800-foot sand.

Hearing on revision of the spacing rule for wells drilled in the Tenney Creek field, Caldwell County, has been set by the commission for hearing on February 19.

Pipe Lines

Start Work on Line to Serve West Texas Field

Sid W. Richardson of Fort Worth, largest independent producer in the Duggan-Slaughter field, most northern oil area in West Texas and the second largest in the district, is purchasing right of way for a 45-mile 6-inch oil line to extend from the Sundown sector of the field, Hockley County, to Aloco Pipe Line Company's Booster station in the Wasson field, near center of north line section 381, Block G, Gaines County. The latter will deliver the oil on a common-carrier basis along with its Wasson field runs amounting to 5000 barrels daily, to the Hobbs, New Mexico, trunk line terminal of Atlantic Pipe Line Company.

Atlantic Refining Company has contracted to purchase between 5000 and 8000 barrels daily from Richardson and others for a minimum of two years with renewal option for a longer period. The contract is reported to involve the purchaser's West Texas posted price plus five cents per barrel to apply on transportation, for oil delivered at Hobbs. The same purchaser has a contract to purchase 5000 barrels daily from Aloco Pipe Line Company for five years, and deliveries began January, 1939.

Contract Line to Handle Logansport-Joaquin Gas

Southern Natural Gas Company has awarded contract to Ford, Bacon and Davis for a 135-mile long 14-inch welded line from Logansport to Monroe, Louisiana.

The right of way has not yet been surveyed but the line will link the Logansport-Joaquin gas field to Southern Natural Gas Company's trunk line at Monroe that serves Birmingham, Atlanta and other southeastern cities. Southern Natural Gas Company's subsidiary company, Southern Production Company, has recently completed several large gas wells at Logansport.

Orders for the pipe have been placed with National Tube Company and Republic Steel Corporation. The line will operate at a pressure of 1200 pounds, and will deliver approximately 100,000,000 feet of gas a day into the company's present line at Monroe.

Short South Texas Oil Line Begins Operating

Sinclair Prairie Oil Company has placed in operation a 10-mile crude system, extending from its 28 wells in the East White Point field to Corpus Christi, Texas, where deliveries are made into 93,000 barrels of tankage at the Southern Pipe Line Company's tanker terminal. The carrier has a rated capacity of 5000 barrels daily, and involves 4 miles of 6-inch line across bay waters.

Contract for Oil Supply For Mississippi Refinery

Paluxy Asphalt Company, Dallas, and Jewell Constantine, of California, have signed a five-year contract with Union Producing Company for a minimum of 2500 barrels of oil per day, to be used by a 3500-barrel refinery near the village of Crupp, in the Yazoo City area.

WORLD-WIDE DEVELOPMENTS

Venezuela Wildcatting Yields Four New Oil Fields

Four new oilfields have been opened in eastern Venezuela since the first of the year, one, a wildcat well still uncompleted this week and three in completed state. Three of the new fields have been opened by Mene Grande Oil Company, a pioneer in eastern Venezuelan development, the fourth by a Consolidated Oil Corporation (Sinclair) subsidiary, the first well of this company in Venezuela.

The latest development is that of the Venezuelan Petroleum Company (Compania Conolidada de Petroleo) a Sinclair subsidiary about 10 miles west of the Jusepin field. The well, in the district of Maturin, State of Monogas, is reported to have 163 feet of sand of which 99 feet is unbroken oil sand. The well is not completed. Casing has not been set nor has an electric log been taken of it, but early last week a drill-stem test flowed 45 barrels in 17 minutes. The oil is reported to be 26.28 gravity. Bottom of the sand is at 4321 feet with the unbroken oils and bottom at 4301 feet. Although in an uncompleted state, this well has apparently opened a new field. The company has slightly less than 10,000 hectares under concession in this locality, the concession being known as the Myers C. concession. Although of course no action looking toward a pipe line will come until the area has been further developed, the company has a terminal concession at Guanta on the Caribbean with sufficient water depth to handle large tankers. This property was acquired several years ago. It is about 100 miles from the Myers C. concession.

Opens Promising Field

When Mene Grande Oil Company late in January completed Santa Rosa 2, five miles east of what is to be the intermediate pump station on the Mene Grande pipe line from Oficina to Puerta La Cruz, it opened one of the most promising fields to have been discovered in Venezuela in some time. The well, producing from a sand at 6536-51 feet, is good for 2000 barrels of 42-gravity oil. Santa Rosa 1, a failure, was drilled seven years ago, five miles east of No. 2. No. 3, located 1200 meters east of No. 2 was drilling.

The gravity of the oil, production and proximity to the pipe line make the new field a most attractive one.

In the Tigre district, where Mene Grande Oil Company has a concession of 70,000 hectares, L.G. 2 is a two-zone producer good for 2000 barrels of 26½-gravity oil, productive sands being located at 6486-6504 and 6294-6306 feet. Total depth was 7418 feet, but it was plugged back. L. G. 3 was drilling. No. 1 was drilled some time ago, termed at the time of its completion Tigre 1. In November, L.M. 1, in the same district but on a different structure from the L.G. wells, was completed for about 1500 barrels. It is located in National Reserve lands, and at the time of its completion was referred to as Leona 1.

Just inside the terminal grounds at the San Tome camp of Mene Grande, but outside the camp itself, the company completed O.S. 13, a wildcat good for about 400 barrels at about 5300 feet. It was drilled past 7000 feet, and plugged back. Oil is 21-gravity, and the sand correlates with one of the Oficina field sands.

The Oficina field has recently had a 2000-meter west extension in No. 116, a 400-barrel well producing 43-gravity oil. However, No. 138, south of No. 116, was dry, but this is not though to be significant as there are several instances of dry holes being drilled at points in the Oficina field that are later surrounded by production. The field has 160 wells completed or drilling, and a daily production of 60,000 barrels. It is T-shaped, more than 7 miles (11½ kilometers) east and west by 5½ miles (9 kilometers) north and south. Wells have numerous sands, and some are being produced from two zones.

Mene Grande Oil Company is drilling a wildcat in the Quiamare district, between the newly discovered Santa Rosa field and Puerta La Cruz, on the Caribbean. Located in the foothills, it is 10 miles east of the Mene Grande road and pipe line.

Standard Oil Company of Venezuela has completed its No. 3 in the El Roble field, good for 1000 barrels, in the same sand as El Roble 2.

The company is drilling the fourth well.

No. 1, which blew out nearly two years ago, is on production and making 1000 barrels per day.

Colombian Socuavoa Wildcat Drilling Below 6000 Feet

Colombian Petroleum Company's Socuavoa wildcat on the Barco concession in Colombia was drilling below 6000 feet in a hole being directed to the Creataceous, expected around or below 8000 feet.

The company's second well at Tres Bocas, on this concession, where No. 1 developed small production, should be drilling shortly. Operations at Rio D'Oro, where several producing wells have been completed, are temporarily halted, while the proven area at Petrolia has been almost completely drilled.

Suspend Work at Los Caritos Following Two Failures

Operations of The Texas Company at Los Caritos, Eastern Venezuela, in the Temblador area, where the first well drilled last year was a producer, have been temporarily suspended following completion of two nearby failures. After completion of No. 1, a second well, down-dip, found some sand with oil in the top but with water below, while the other, drilled on strike, found the sand pinched out.

The Texas Company's Rincon-Largo 1, also a wildcat, was side-tracking stuck pipe at around 9300 feet. Sands which may be productive have been encountered around 8400-8500 feet, but it is the purpose of the company to drill the well to a greater depth as an exploratory measure, after which upper sands will be tested. This well is on the Santa Anna structure, where the Mene Grande has a gas well at 8600 feet.

Development for Oil Is Hazardous Business

The hazardous nature of the oil business, which has held oil company earnings down to comparatively low levels on the average, has been attested in the disappointing results in development of the Barco concession, Colombia.

It is estimated that at least two years will be required for fully testing all the known structures within the concession, and further drilling may add to the oil reserves of the property. But so far, the concession has failed to measure up to original expectations of the concessionaires.

The property is being developed jointly by The Texas Corporation and Socony-Vacuum Oil Company, through 50-50 ownership of the capital stock of South American Gulf Oil Company, which owns 79 percent of the capital stock of Colombian Petroleum Company, operating concern.

Upon completion in November, 1939, of a 263-mile, $18,000,000 pipe line over the Andes between producing fields of the concession and the Caribbean Sea, the owners of the concession had spent about $40,000,000 in its development. At the time the principal field of the concession, Petrolea, averaged 18,000 barrels a day; and it is understood to have declined by now to around 10,000 barrels daily.

Under the concession from the Colombian government, construction of the pipe line was obligatory when and if production from the concession amounted to 23,000 barrels daily. However, at the time that the line was completed, the owners apparently felt that the capital expenditures on the producing and pipe line properties would be justified.

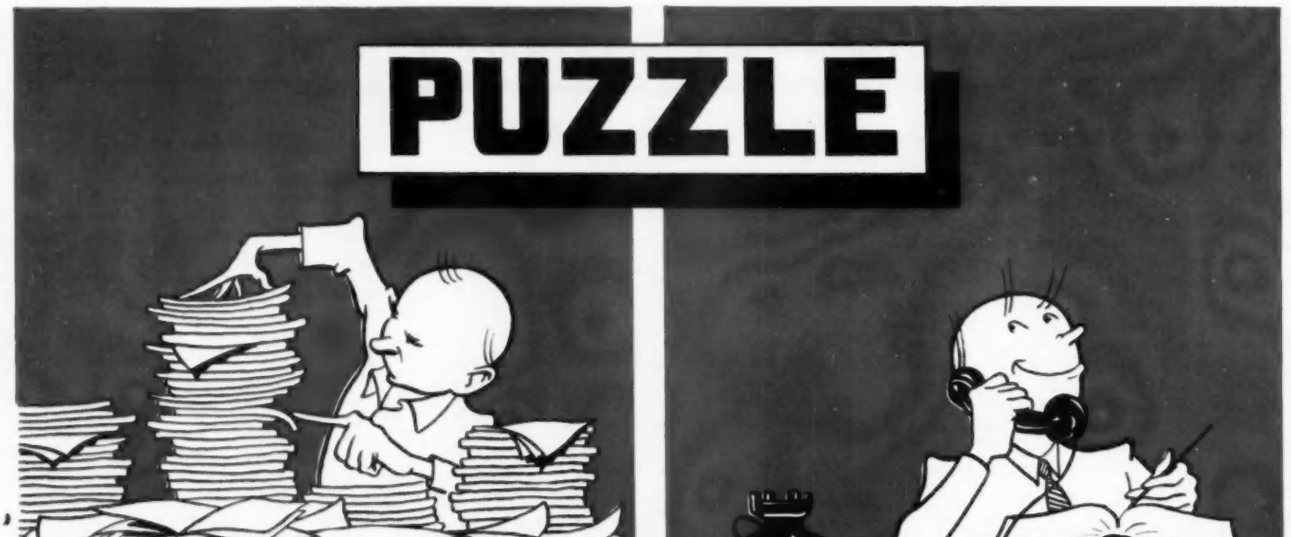
A comprehensive article on construction and completion of the Barco pipe line, an outstanding engineering feat, appeared in this publication October 23, 1939.

British War Financing May Involve Large Oil Interests

Direct investments of British interests in the Shell Union Oil Corporation and other oil companies are included in properties totaling nearly $500,000,000 which are to be sold to United States investment companies as part of Britain's liquidation of her interests here to raise funds for war purposes.

Initiated by Secretary of the Treasury Morgenthau and Sir Frederick Phillips, British Undersecretary of Treasury, details of the liquidation will be handled under the direction of the Securities and Exchange Commission, which regulates the investment trust business, but terms and arrangements will be worked out by the British and American interests directly involved.

With the development of the plan for the disposition of British properties in this country, reports arose of similar liquidations in other American countries, which would include British oil holdings in South America, but Secretary Morgenthau said he had no information on such proposals.



ONE OF THESE MEN USES THE COMPOSITE CATALOG CAN YOU FIND HIM?

THIS is not a quiz contest—no prizes are offered—all we want to know is which man in your opinion is using The Composite Catalog. The answer is obvious to you fellows who have been using the catalog right along for these twelve years but for the benefit of the new-comers we want to offer a few clues in the form of pertinent facts.

The new 1941 Composite Catalog, a 2546-page volume, is the largest and most complete catalog published for the drilling, producing and pipe line industry. Most leading oil country manufacturers have filed their complete or condensed catalogs in this, the twelfth edition. In many instances the data filed represents the only oil field catalog these manufacturers will issue during 1941. In other words, this catalog of many catalogs is not only complete and up-to-date but the information is reliable. Too, the fact that all of the information is right together, under the same cover and completely indexed, makes the book easy for you to use.

Now, you new-comers to the ranks of those thousands of oil men who swear by The Composite Catalog, can understand why the fellow in the right-hand panel of the above illustration looks so happy.

SAVES TIME

the COMPOSITE CATALOG

OF OIL FIELD AND PIPE LINE EQUIPMENT

U. S. FIELD OPERATIONS

Illinois

Hamilton Semi-Wildcat Makes Oil After Acid Treatment

A Hamilton County semi-wildcat, ½ mile from a small McClosky producer, the only well in the area, swabbed 11 barrels an hour following an acid treatment in McClosky lime at 3400-10 feet and will be put on pump for completion test. It is Kingwood Oil Company's Moore 1, S½ SE NW 2-4s-6e. Casing was perforated opposite the McClosky show before acidization. Total depth is 3466 feet.

The company was drilling at 1950 feet in its first offset to Prince 1, completed some time ago as an extension to the Dale field in Hamilton County. The new test is in the SW NW NW 31-5s-7e.

Second Trenton producer in the Lake Centralia-Salem pool, Marion County, Magnolia Petroleum Company's Shanafelt 32, Section 29-2n-2e, was nearing completion after flowing 229 barrels in 24 hours natural from 4609 feet. It was given a 100-quart shot, and was cleaning out 1600 feet off bottom. The Trenton discovery was completed on pump. Magnolia Petroleum Company has started five new Trenton operations, all Devonian wells which will be deepened, bringing to 25 the total number of Trenton operations in the field. The Texas Company has reached the Trenton at two operations, Fossieck 12 and Friedrich 21-A, both in Section 29-2n-2e, but both were shut down, waiting on orders, while the company decides the best completion process to employ. Total depth of Fossieck 12 is 4507 feet, and of Friedrich 21-A 4511 feet. Each well is about three feet in the formation.

DeKalb Agricultural Association's Hunleth 4, SE NE NW 29-3s-4w, McKinley field, Washington County, topped the lower Benoist sand at 1026, nine feet higher than at any previous test in the field, and was showing for a 200- to 250-barrel well. McBride has completed Frieman 2, in the field, NW SE NW 29-3s-4w, with an initial of 101 barrels in 17 hours from 1029½ feet. There are now four producers in the field.

A Franklin County wildcat, four miles south of the new Benton field, E. S. Adkin's Orient 1-B, SE NE NW 12-7s-2e, was being tested on pump. The well is bottomed in the Tar Springs, topped at 2054 feet. In the new Benton field, Adkins was running tubing at his second producer, Orient 2, SE SW SE 24-6s-2e, an offset to the discovery well, which was showing for a good producer in the Tar Springs. It swabbed 176 barrels of oil in about 30 hours before a light shot of nitro.

Mt. Carmel Townsite Campaign

The city of Mt. Carmel, Wabash County, was assured of a townsite drilling boom as casing was cemented at two more operations in the city limits, one of which will test the Biehl sand and the other the Cypress. First well in the city is a McClosky producer. Saturation was recovered at 1533-54 feet in Biehl sand at Hall-Jordan Carson 1, Harris addition, and same operators set pipe to the Cypress at Bruner 1, block 219. Nicken's Riggs 1, SW SE SW 17-1s-12w, just outside the city, made 15 barrels an hour from the McClosky in swabbing tests, but was still being tested. The field was discovered some time ago, but only recently the McClosky was found productive, and just a few days ago the first townsite test was successfully completed. There are about 20 operations in the field.

Benedum-Trees' Johnson County wildcat, Cavitt 1, near Vienna, SW SW NW 24-11s-3e, was drilling at 3200 feet. It is to be taken to the Devonian lime. Elevation is 719 feet, Glen Dean was topped at 1332 feet, Benoist 1837 feet, and St. Genevieve at 1995 feet. A noncommercial show of oil was found in the Benoist.

A wildcat two miles southeast of Maunie, White County, Ralph Halbert et al's E. P. Hubele 1, NE NW NW 7-6s-11e, was shut down on orders at 3025 feet. The McClosky was dry, and saturation in the Aux Vases proved noncommercial on core analysis. An electric log was being made to determine whether casing should be set to the Palestine sand. Another White County wildcat, Ryan Oil Company's Keck Heirs 1, NE NW SE 36-6s-10e, had a fishing job at 2766 feet with drill pipe twisted off in the Benoist section, which had shown no saturation. Cypress saturation was reported promising at 2571-2583 feet. In the south New Harmony field, recently opened with a Waltersburg-sand completion, Benedum-Trees was preparing to reshoot Golden 1, NW NE NE 29-5s-14w, after a plug-back from 2832 to 2824 feet in Benoist sand. Previous to the plug-back, the well made 13 barrels of oil and 70 barrels of water in 24 hours. In the same area, Whisenant & Trenchard were drilling below surface pipe in Lewis Production Company's E. H. Morris 1, NW SE NW 21-5s-14w, a mile north and east of the Waltersburg discovery well.

A Bond County wildcat, W. S. Tatum's Andrews 1, SE NE SW 7-4n-2w, was drilling below 2100 feet. The test will be taken to the Devonian lime. Another Bond wildcat, Haines, Jackson & Jackson's Hunter 1, SE SE SW 1-4n-4w, was drilling at 800 feet.

The Carter Oil Company has released 57 tracts of land totaling 5000 acres in the Mattoon area of Coles County. The acreage, in four townships, had been under lease for more than two years. The failure of several tests in the area coupled with recent core-drill findings brought about the company's decision to give up its holdings in Lafayette, Paradise, Humboldt and Pleasant Grove townships.

In the new Woodlawn field of Jefferson County, Ruwaldt's Oslager 1, NE SE SE 26-2s-1e, was being cleaned out and oil was rising in the hole at the rate of 150 feet an hour. It was estimated the well would make from 75 to 100 barrels on pump from Benoist sand at 2007-21 feet. It is the second producer in the field.

The Hoodville field in Hamilton County is now the most active in Illinois with a total of 32 operations. For the first time in many months, it surpassed the Calvin pool of White County where there are now 31 tests under way.

Indiana

Knox County Wildcat Among Week's First Reports

In Knox County, south of Bruceville, Amerlagene, Inc.'s Ida Moran 1, N½ Donation 75, 3n-9w, Midwest Development Company farmout, was a new wildcat start, drilling below surface casing for a 2800-foot Devonian test.

Abandoned was another Knox County wildcat near Oaktown, C. L. McGuire's M. E. Bland 1, SE NE SE 15-5n-10w, Busseron Township. Hole was bottomed at 3053 feet, through the Devonian lime.

In Posey County, ¼-mile east of New Harmony, C. A. Lynch and Harry Lewis' New Harmony Realty Company 1, NW NW NW 6-5s-13w, was drilling at 1100 feet. Its successful completion might set off a townlot drilling play.

Another closely watched Posey County wildcat, H. K. Riddle's America Welsh 1, NE NE NE 10-4s-14w, was coring for the Cypress after getting two slight, non-commercial shows in the Tar Springs at 2335-41 and 2367-73 feet. Starting at surface elevation of 381 feet, the wildcat, northeast of New Harmony field production, topped the base of the Manard at 2143 feet, about 40 feet higher than the Anderson Griffin Properties, Inc.'s Frank O. Faul 1, recently abandoned McClosky failure.

In that portion of the Calvin field play extending across the Wabash River into Posey County, Tide Water Associated Oil Company's Blanche Doll 4, CW½ SW SE 6-7s-11w, was an Aux Vases sand completion at 2775 to 2795 feet, initialing 100 barrels on pump in 16 hours after 20-quart shot.

In the Bufkin pool of Southwest Robinson Township, Posey County, Gulf Refining Company's Dickhaut 3, SE NW SW 5-6s-12w, was waiting on orders following electric log survey at 2385 feet, through the Cypress sand, which was reported dry.

A wildcat in northeast Gibson County, Columbia Township, two miles northeast of Oakland City, Oleum Corporation's Mrs. Welzie Brokaw 1, SE SW 5-2n-8w, was being put on pump for a

test of the Cypress (Oakland City) sand at 1190-1215 feet following a 40-quart shot.

Disappointing with salt water and bad cement job was Ed S. Holman's prospective McClosky pool-opener in Posey County, 1¼ miles northeast of Griffin, John & C. Oeth 1, SE SE NE 6-4s-13w. Test was reported shut down for orders. To the northwest, Holman's E. B. Mumford et al's SE NW NE 6-4s-13w, was drilling below 2100 feet. Some oil saturation was encountered in the Palestine sand at about 1700 feet.

In Point Township, Posey County, Basin Drilling Company and North Central Oil Company made location for Oakland City College 2, SE NE SW 16-8s-14w, Sun Oil Company farmout and the fourth test to be drilled in the new field.

Forest City Basin

Richardson Test To Be Abandoned in Hunton Lime

McNulty and Bass et al's Cander 1, SW NW SW 15-2n-13e, 25 miles northwest of Falls City pool, Richardson County, showed water in Hunton lime and was to be abandoned. Hole was drilled to 2602 feet in Viola lime and 5-inch casing set at 2066 feet. Casing was perforated with nine shots at 2025-2040 feet for water. Five shots at 1990-1998 feet and five more at 1916-24 feet failed to show. Plug was set at 1853 feet, and 11 shots perforated at 1796-1820 feet. Two-inch tubing was then run to 1813 feet in Hunton lime, topped at 1789 feet, and pay was acidized with 50 gallons of acid and 300 gallons of butane for no results. An additional 450 gallons of acid brought in water.

Dan McLaughlin & Sons et al's Thorp 1, C NE NE 27-10-20e, four miles southeast of McLaughlin oil and gas pool, Leavenworth County, Kansas, ran electric log to 2209½ feet in Arbuckle lime, topped at 2163 feet, for no shows. A second electric log showed gas in Arbuckle lime at 2164-87 feet. Casing will be run for a test.

McCain & Sherrod were under-reaming 6-inch casing at 1400 feet in Green 1, SWc NW 9-11-19e, Douglas County.

Two new wildcats were among new starts. Veedor Supply Company, West et al, spudded Battin 1, C S½ SE NW 15-2n-18w, and S. F. Miller was drilling below 400 feet at Bethloud 1, C W½ SW SW 2-4n-6e.

Continental Petroleum Company of Nebraska was drilling around 1250 feet in Gauchat 1, SW NW NE 26-6n-13e, northern Nemaha County. August Krueger et al's Roe 1, NE SE SW SW 5-7n-7e, cemented 7-inch casing at 1258 feet, and drilled to 1528 feet.

Two Missouri wildcats were active: J. Flory and J. A. Kilby et al's Meyer 1, SE SE NW 27-62n-39w, Holt County, was fishing at 735 feet. E. V. Jackson and Fred Rust et al's Hays 1, C NE NE 22-66n-42w, Atchison County, cleared litigation troubles and was making hole below 1700 feet.

In Falls City pool, R. L. Campbell et al's Dora Schock 2, SW SE SW 20-1n-16e, pumped 182 barrels of oil in nine hours on completion test. Hunton lime at 2278-82 feet was acidized with 2000 gallons, and penetrated with 2000 gallons of butane.

Oklahoma

Gas Strike in Logan; Wilcox Wildcat Interesting

Big Chief Drilling Company and Kenneth Ellison completed a wildcat gasser at Strange 1, C SW SE 27-18n-4w, 1¼ miles east of Lovell pool, Logan County. Through perforations in Elgin sand at 3151-56 feet, open flow tests averaged between 7,000,000 and 10,000,000 feet per day. Herrington was topped at 1395 feet, Ft. Riley 1620 feet, Pawhuska 1705 feet, Deer Creek 3045 feet, Hoover 3516 feet, Oread 3640 feet, Tonkawa lime 3820 feet, Tonkawa sand 3852 feet, Lovell lime 4040 feet, Lovell sand 4085 feet, Avant 4266 feet, missed Layton sand and drilled to 5127 feet. When pipe was perforated in Avant, hole filled with water. Seven-inch casing was cemented at 4318 feet.

E. W. Hamilton, Tulsa, and Fain Drilling Company, Oklahoma City, were commanding attention with Donoghue 1, C NW SE 7-17n-1w, four miles west of Langston pool and 10 miles northeast of Guthrie, Logan County. Checking structurally high, the wildcat loomed as a Wilcox-sand discovery. Pawhuska was topped at 2000 feet, Deer Creek 2265 feet, Lecompton 2475 feet, Upper Hoover 2500 feet, Lower Hoover 2625 feet, Oread 2885 feet, Avant 3470 feet, Dewey 3570 feet, Perry gas sand 3670 feet, Hogshooter 4100 feet, Layton 4130 feet, Checkerboard 4170 feet, Lower Checkerboard 4380 feet, an Bartlesville 5042 feet. A good show of oil was cored at 5049-62 feet in Bartlesville. Mississippi lime was logged at 5066 feet, thinning out to top Woodford shale at 5080 feet. Misener sand was at 5132-55 feet, with a 3-foot saturated core recovery at 5147-55 feet. Hunton lime was topped at 5155 feet, Sylvan 5181 feet, Viola 5260 feet, and bit was expected to encounter Wilcox sand shortly. On Sylvan shale, the wildcat checked 275 feet higher than a dry hole in Section 5-17n-1w, and higher than a failure in Section 24-17n-2w, but just below Langston pool structure. At 5310 feet, bit was in Simpson dense. Continental Oil Company is reported to have bought out the original operators.

New Wildcat Activity

Superior Oil Company was moving in rig and materials at Osage 1, SE NW NW 22-21n-9e, south of Osage City pool. In Pawnee County, Malernee Oil Company will drill an Arbuckle-lime test at Lucas 1A, NW SE NW 28-21n-8e, in the old Cleveland district.

Joe Josephson, Oklahoma City, completed cellar and pits at McCurry 1, SWc NW 15-4n-6e, in the Ada gas field, Pontotoc County. The Carter Oil Company staked Gaffney 1, C E½ SE NW 12-16n-1w, south of South Langston pool, Logan County. Keener Oil & Gas Company staked Hailey 1, SE NW SE 36-12n-9e, offset to the North Okemah pool discovery, Okfuskee County.

Wildcat Failures

R. R. Kirchner et al's Carson 1, NE SE NW 23-17n-9e, two miles east of Walker pool, Creek County, filled with water in Wilcox sand at 3199-3225 feet. W. F. Eppler plugged McBirney 1, C SW SW 12-18n-13e, in the Jenks area of Tulsa County, at 1392 feet.

Portable Drilling Company et al's Conway 1-A, NEc 16-23n-2w, ¼ mile northeast of Billings pool, Noble County, was abandoned in dry second Wilcox sand at 4849-99½ feet.

Colvin & Hicks' Westheimer-Daube 2, C W½ SE SW 27-6s-2e, north of Marietta, Love County, topped Hunton at 2114 feet, Dolomite 2310 feet, Viola 2680 feet, Lime 3002-11 feet, sandy lime 3011-18 feet, and was shut down for orders at 3018 feet.

Two important wildcats were drilling in Pontotoc and Pottawatomie counties. Alma Oil Company's Norris 1, NE NW SW 22-4n-4e, 4 miles southwest of Bebee pool, logged sands at 800-910, 1100-20, 1240-50, 1320-40, and 1490-1500 feet. Hunton lime was absent, and Trenton was topped at 1500 feet, Bromide 1575 feet, Oil Creek 2460 feet, and bit was below 2750 feet.

Grisso Royalty Company and Eason Oil Company's Royster 1, SW NW NW 33-6n-3e, offset to a failure in Wilcox sand, on drill-stem test at 2868-91 feet open 15 minutes showed 8,000,000 feet of gas with shut-in rock pressure of 850 pounds. The wildcat is between West Asher and Byars pools, and was rotating below 3650 feet.

Harry Culver and Shepherd et al's Waite 3, NW SW NE 9-5n-5e, Pottawatomie County side of South Konawa pool, flowed 2500 barrels of crude in 15½ hours on completion test to rate the largest producer in the pool. Hole was bottomed at 2602 feet in Dolomite. Same operators staked location for Wilmot 2, SWc 3-5n-5e.

Kansas

Cowley County Wildcat Indicates Bartlesville Pool

Sinclair Prairie Oil Company promised a Bartlesville sand discovery in Cowley County at Gibson 1, SEc NW 29-34-3e, 1¼ miles north of Millett gas pool and 2½ miles south of Bestall oil pool. Sand was topped at 3360 feet and oil encountered at 3367 feet. When bit penetrated to 3378 feet, hole filled 275 feet with high-gravity oil in three hours. Operators were pulling 8-inch casing at 2650 feet in cable-tool hole to shoot pay zone. The company has a solid block of approximately 1000 acres surrounding the discovery, and 2000 acres in an adjoining block. The test is estimated a 70- to 100-barrel natural producer.

Ewers-Simpson Oil Company et al's Bundy 1, C SW SW 12-9-22w, four miles east of Morel pool, Graham County, swabbed five barrels of fluid per hour off bottom at 3879 feet in Arbuckle lime, topped at 3869 feet. Fluid centrifuged 40 percent basic sediment and water. Previously coring good

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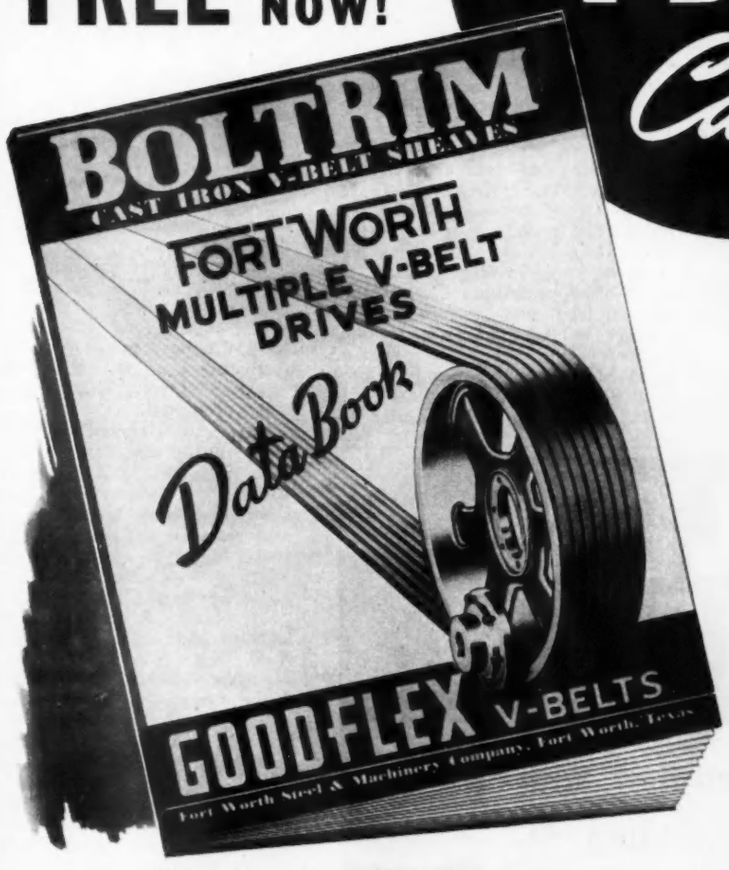

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saturation in lime at 3874-79 feet, the wildcat was a disappointment. Pay was treated with 500 gallons of acid. Gulf Oil Corporation bailed ½ gallon of asphalt per hour after washing hole to bottom at Boller 1, C E½ SE SE 29-7-22w, eight miles east of Penokee pool. Hole is bottomed at 3858½ feet in Arbuckle lime, and operators were running 2½-inch tubing to jet with butane and acid. R. W. Shields et al's Paxson 1, NEc 11-8-24w, Penokee pool discovery, pumped eight barrels per hour for eight hours on a recent test. Crude is 43.2-gravity. Pay is Lansing lime at 3750-56 feet.

Earl F. Wakefield completed two semi-wildcat tests. Miller 1, NEc SE 17-16-13w, south of Trapp pool, Barton County, established a draw-down potential of 2222 barrels daily from Arbuckle lime at 3393-3401 feet, treated with 3000 gallons of acid. Janssen 1, C E½ SE NW 29-17-10w, between Stumps and Bloomer pools, Ellsworth County, pumped 429 barrels of oil and 70 barrels of water in 24 hours from Arbuckle lime, logged at 3257-3300 feet and acidized with 3000 gallons.

New Gas Area

Northern Natural Gas Company opened a new gas area between Hugoton and Liberal gas pools, Stevens County, at Bolds 1, NWc SE 26-32-35w, which gauged 8,300,000 feet per day on completion test. Fort Riley was penetrated to 2775 feet, and plug set at 2765 feet. Pay was acidized with 10,500 gallons.

Stearns Drilling Company completed North Emmeran pool discovery at Witt 1, C S½ NE SW 28-12-16w, Ellis County, pumping 647 barrels of 36.4-gravity oil and 25 percent water in 24 hours. Hole was carried to 3626 feet in Arbuckle lime, plug was set at 3527 feet, and at 3503-10 feet in Lansing lime, hole filled 3100 feet with fluid. Packer was placed at 3482 feet, and pay acidized with 8000 gallons of acid. Pump recovered 140 barrels of oil in five hours with some water, and on second test pumped 323 barrels of crude in eight hours plus 25 percent water. Lansing lime was topped at 3342 feet, and Kansas City lime based at 3545 feet.

Fred Steckel et al's Fee 1-A, C S½ SW NE 11-20-12w, south of Ernsting pool, Barton County, drilled plugs in Arbuckle lime to 3381 feet for a 125-barrel fill-up in 24 hours, increasing to 400 barrels in 72 hours. Arbuckle was topped at 3353 feet, and treated in two stages with 500 gallons and 1000 gallons. Fain Drilling Company et al's Thole 1, C E½ SE SE 23-21-12w, two miles north of Max pool, Stafford County, perforated with 48 shots at 3593-3607 feet for no show. On treatment with 1000 gallons of acid, swab test showed 3½ barrels of fluid per hour for eight hours, 60 percent water. At 3617 feet, 75 feet of fluid entered hole, and bit was rotating below 3645 feet in Arbuckle lime, topped at 3585 feet.

Isern Brothers et al's Lillard 1, C W½ SW SE 6-16-11w, 2½ miles west of Davidson pool, Barton County, recovered 2½ feet of dolomite with stains showing spotted porosity in core at 3274-78 feet in Arbuckle lime, topped at 3271 feet. Four-inch casing was cemented at 3272 feet, and standard tools rigged up at 3278 feet.

Earl F. Wakefield and Atlantic Refining Company's Prescot 1, C W½ NW SW 32-23-14w, three miles northwest of Rattlesnake pool and six miles west of St. John, Stafford County, logged Anhydrite at 893 feet, Florence 2200 feet, Wreford 2290 feet, Topeka 3150 feet, Lansing 3614 feet for small shows of oil at 3809-13 and 3820-24 feet. Kansas City lime was based at 3860 feet, Sooy Conglomerate topped at 940 feet, Viola lime 3976 feet, Simpson 3990 feet, Arbuckle 4083 feet for water, and hole plugged at 4093 feet.

A. D. Cochran et al's Miller 1, C N½ NW SW 31-20-9w, 2½ miles south of Chase pool, Rice County, topped Topeka lime at 2730 feet, Lansing 2970 feet, Sooy 3254 feet, Simpson 3300 feet with small show of oil 3311 feet, Arbuckle 3343½ feet, and cored 3346-52 feet for no shows. Hole was plugged at 3375 feet.

Bradley Oil Company et al's Rolf 1, C N½ NW NW 24-18-10w, two miles northeast of Orth pool, Rice County, was abandoned in dry Arbuckle lime at 3294-3303 feet. Topeka lime was topped at 2528 feet, Lansing 2947 feet, Sooy 3270 feet, and Arbuckle at 3294 feet.

Hinkle Oil Company's Kitchen 1, C W½ NW NE 11-18-9w, two miles southeast of Lorraine pool, Rice County, was abandoned in dry Arbuckle lime, topped at 3303 feet and penetrated to 3324 feet.

Bunting-Dowling and Skow et al's Mantz 1, C W½ SW NE 17-19-10w, two miles north of Silica pool and three miles east of Eberhardt pool, Rice County, proved uncommercial in Arbuckle lime at 3322-65 feet and was plugged. Two gallons of oil per hour was recovered.

Westgate - Greenland Oil Company was rigging up rotary tools for Bukey 1, C S½ SE NW 17-18-1w, six miles south of Roxbury pool, McPherson County. Rex & Morris were moving in materials at Kappan 1, C N½ NW NE 16-18-4e, 3½ miles south of Lost Springs pool, Marion County and five miles north of Propp gas field.

Meinholdt & Edwards topped Mississippi lime at 1075 feet in Stanley 1, NW NE NW 3-14-21e, wildcat in Douglas County. Operators were shutdown for casing at 1135 feet.

Stearns Drilling Company and Vernon Oil & Gas Company moved in rig at Popp 1, NE SE NW 15-16-14w, 1½ miles west of Trapp pool, Barton County.

Trees Oil Company had cellar and bits at Johnston 1, NW SW SE 13-31-4e, two miles east of Sherwood pool, Cowley County, and C. H. Reeser et al's Knight 1, SEc SW 31-27-11e, Greenwood County, was a new location.

Shell Oil Company's Ruby 1, NWc NE 36-14-13w, 2½ miles west of Greenvale pool and east of Hall pool, Russell County, logged Anhydrite at 605 feet, Fort Riley 1530 feet, Florence 1625 feet, Topeka 2495 feet, Lansing-Kansas City lime 2815 feet, and cores to 2863 feet recovered good oil stains with fair to good porosity.

Engle Oil Company et al's Carlson 1, SW SE SE 8-20-5w, two miles north of Bornholdt pool, McPherson County, was rigging up tools.

Pryor & Lockhart et al's Weisenthal 1, SW SE NE 30-15-10w, four miles east of Davidson pool, Ellsworth County, topped Fort Riley at 1475 feet, Florence 1575 feet, Neva 1820 feet, and was rotating below 2975 feet.

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West Texas

Added Outlet Assures More Drilling in Duggan-Slaughter

The Duggan-Slaughter field, embracing portions of Cochran, Hockley and Terry counties, is destined to advance to first place in volume of drilling as result of independents having obtained an additional crude market and arranged for a separate pipe-line outlet. Sid Richardson, owner of about 2500 proved acres with 16 wells, negotiated the crude market and is constructing a six-inch carrier from the Sundown sector of the field to start deliveries to Atlantic Refining Company, which will purchase from 5000 to 8000 barrels daily. Richardson has projected an initial program of 60 wells using six rotary rigs. Other producers in the Sundown area will participate in the crude contract with Atlantic Refining Company, thereby resulting in a greater volume of offsets to be met by other operators.

The field currently has 28 active tests, and 18 wells in progress of completion, else awaiting pipe-line connections. Locations, derricks and rigs total 25. Magnolia Pipe Line Company serves the mid-section of the field with an 8-inch gravity trunk line outlet, while The Texas-New Mexico Pipe Line Company has a telescope 8-, 10- and 14-inch gravity line to Midland rated at 8000 barrels daily. However, the latter has not been placed in service, other than accumulating stocks at its Sundown terminal. A refinery at Levelland was the first to provide a market outlet.

Gulf Oil Corporation's Mallet 5, offsetting production on the south end of the field and in Terry County, flowed 839 barrels of oil in 12 hours after using 10,000 gallons of acid at 5040 feet. Magnolia Petroleum Company's Woodley 2, west offset to the most northerly producer in Cochran County, flowed 47 barrels of oil in one hour through 1-inch choke on preliminary gauge after using 10,000 gallons of acid in broken pay at 4945-93 feet.

Amon Carter's Wasson 4-D, projected Ordovician test for the Gaines County sector of the Wasson field, was awaiting orders at 10,079 feet. It is due to be plugged back to try for completion in the 7100-foot saturation passed up, although short of its goal. Extremely hard chert and lime formation materially boosted drilling costs.

San Andreas Production Company's Johnson-Sun 1, 1 mile south of production in the Cedar Lake pool, Gaines County, was drilling at 4930 feet, having missed the regular oil level. This 13-well pool is still dependent upon tank-truck shipments for outlet, costing operators 15 cents per barrel for drayage.

Geo. P. Livermore and Tom Sloan's Ownby-Shell 1, Yoakum County semi-wildcat and three miles northeast of the Waples-Platter two-well pool, excluded water in plugging back from 5294 feet to 5280 feet. The well gauged 17 barrels of oil in 3 hours after flowing in pit for 12 hours to unload residue from treatment with 3500 gallons of acid. Top of pay was called at 5227 feet, with an elevation of 3558 feet.

The five-well drilling program underway near the Abell pool, Pecos County's first Simpson-sand strike, remains in the soptlight due to these tests determining whether owners of short-term leases will proceed with development. Magnolia Petroleum Company's Markey 1, ½ mile northwest of the discovery, was drilling at 5392 feet, with an elevation of 2391 feet, and its State-Sharp 1, 1¼ miles northwest of the producer was drliling at 5345 feet, with an elevation of 2395 feet. The company's Baldwin 1, located 1½ miles north by east of the discovery, was drilling at 4815 feet. Phillips Petroleum Company's Silverman 1, south offset to the 5357-foot discovery, was drilling at 2660 feet, while George Abell et al's Rixse 1, northeast outpost, was drilling at 1170 feet.

Gulf Oil Corporation's Waddell 17, Crane County wildcat and on a strike between the Abell and Sand Hills fields, was drilling at 4100 feet, having logged gas shows at intervals in the Upper Permian. The favorable structural position of the latter test has caused lease and royalty prices to soar in the general area.

Gulf Oil Corporation's Waddell 37, SE NW SW PSL Section 11, Block 23, near south edge of the prolific sector of the Gulf-Waddell field, Crane County, gauged 2124 barrels of 34.8-gravity oil on 5-hour test, including 1098 barrels at the last two hours, after using 5000 gallons of acid at 3505 feet. The customary six-hour gauge could not be completed because of inadequate tankage. Gulf Oil Corporation's University 1-F, Crane County wildcat between the Church & Fields and Sand Hills fields, was drilling at 9405 feet, having failed to reach the Ordovician, the projected goal.

Roeser & Pendleton's Hayes 1, north offset to the wet gas discovery in the Quito area, Ward County, was testing for water in Delaware sand at 5083-5184 feet. Small show of oil and gas is reported in the 800-foot column of fluid.

Recovery of thin beds of oil saturation in Ellenberger dolomite by Shell Oil Company's Rutherford 1, northwest offset to its Aspermont pool discovery, Stonewall County, caused the company to authorize the landing of a string of 5½-inch pipe for a production test. Top of Ellenberger was called at 6197 feet with an elevation of 1760 feet. Drill-stem test at 6226 feet yielded rotary mud, but broken saturation was logged in coring to 6239 feet, total depth. Rutherford 1 proved dry in the pool's Mississippian pay at 6012-65 feet.

General Crude Oil Company's Flannigan 12, projected Ordovician test for the Royston field, Fisher County, resumed drilling at 5945 feet, using cable tools, after testing dry below 8-inch casing seat at 5923 feet.

A. P. Heinze et al's Kincaid 1, Coleman County wildcat and 4 miles west of Glen Cove, was awaiting orders after testing dry at 3647 feet. String of 5½-inch pipe was landed at 3625 feet on the strength of reported oil saturation in sandy-lime at 3628-47 feet. It is due to deepen before plugging back for production tests through casing perforations opposite shows passed up in the Upper Strawn series.

Two indirect offsets to Danciger Oil & Refineries, Inc.'s Kelso pool discovery, Jones County, failed to produce from the 2341-foot Flippen sand. The company's Gale 1, southeast of the producer, quit in water sand at 2725-30 feet, and Kelso 2, northwest offset to the original well, was drilling at 2450 feet. Recent wildcat failures in Jones County involve G. M. Gillespie et al's Young 2, NE Section 53, Orphan Asylum Lands, and Thos. D. Humphrey et al's Norwood 1, J. W. McKissick Survey, abandoned at 2260 feet and 2950 feet, respectively.

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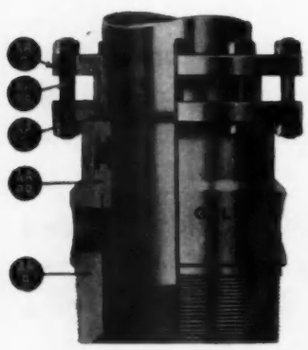

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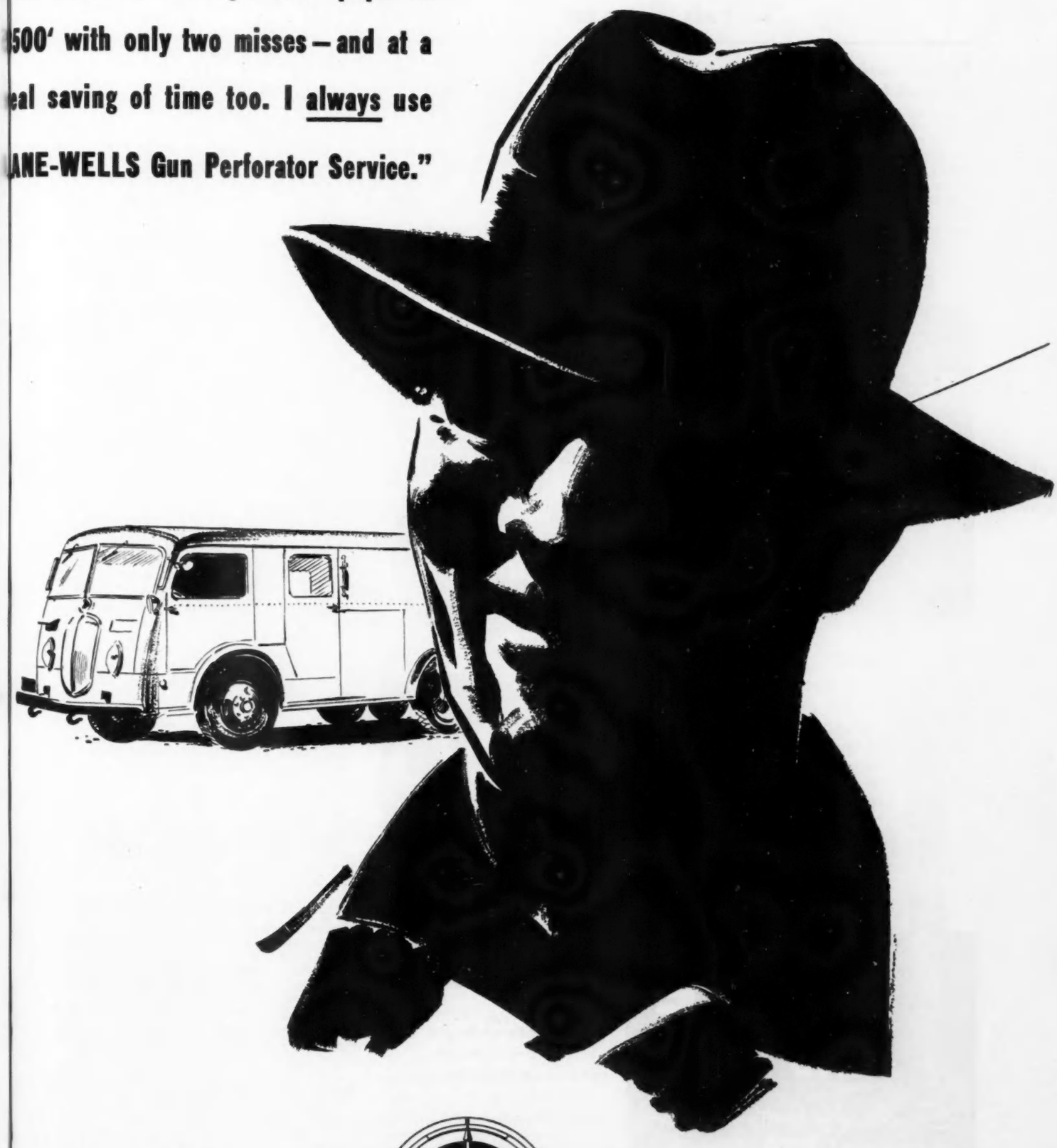

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North Texas

Fargo Southwest Extension Assured by Well Showing

Southwest extension for the Fargo pool, northwestern Wilbarger County, was assured when Amerada Petroleum Corporation's Folley Unit 1, SW SW H&TC Section 36, Block 15, recovered oil in using formation tester on 2 Canyon pay levels. The test was drilling at 4280 feet to explore the Strawn before running pipe for completion. First indicated production was from oil-saturated sand at 3986-99 feet, and the lower pay was logged at 4246-74 feet. The well flowed oil in pit when tester was used at 3987-4000 feet, and drill-stem test at 4246-75 feet yielded 60 feet of oil and 150 feet of rotary fluid. The company's Harrell-Magnolia 1, NWc NE Section 37, south outpost, logged dry sand in Cisco at 3138-42 feet, and was drilling at 3260 feet. The latter is on a lease farmed out by Magnolia Petroleum Company.

Two new operations under way in the Fargo pool involve Anderson-Prichard Oil Corporation's Flanaken 1, SE NW Section 36, offsetting Cisco sand production, and Humble Oil & Refining Company's McCaleb 1, SE NE Section 34. The latter is a north outpost, and offsets the area's single Canyon producer. The 9 completed wells are dependent upon truck deliveries to an Oklahoma refinery for a market outlet.

The Griffin-Kadane 4-well deep pool, northwestern Archer County, has 7 active and projected tests that will seek production in the 4300-foot Strawn. The completion of a 4000-foot east extension in December and a prolific offset early this month provides the possibility of the pool embracing considerable area. Deep Oil Development Company et al's Griffin 1 is testing the intermediate acreage, while Petroleum Producers Company and Deep Oil Development Company's Nora Lynch 1, SE SE SW Section 20, a mile northeast outpost, was drilling at 3000 feet.

King Oil Company et al's Taylor 1, Archer County wildcat and on a strike between the Hull-Silk and Mankins areas, is scheduled to resume testing the Mississippian lime saturation at 4929-63 feet, where small volume of free oil was developed after acidizing through perforations. The Bend lime was tested last week through perforations at 4674-4697 feet, resulting in small amount of oil and water after using 5000 gallons of acid. Adams Oil & Gas Company's Powell 1, ½ mile northeast of Archer City, was drilling at 5010 feet, and will continue to the Ordovician. Nominal streaks of oil saturation were logged at intervals in the Strawn and Upper Bend. Deep Oil Development Company and C. B. Christie's T. Moer 1-B, third test for the Scotland deep pool uncovered by Adams Oil & Gas Company in the 4100-foot Strawn in 1938, missed the discovery pay and was drilling at 4605 feet.

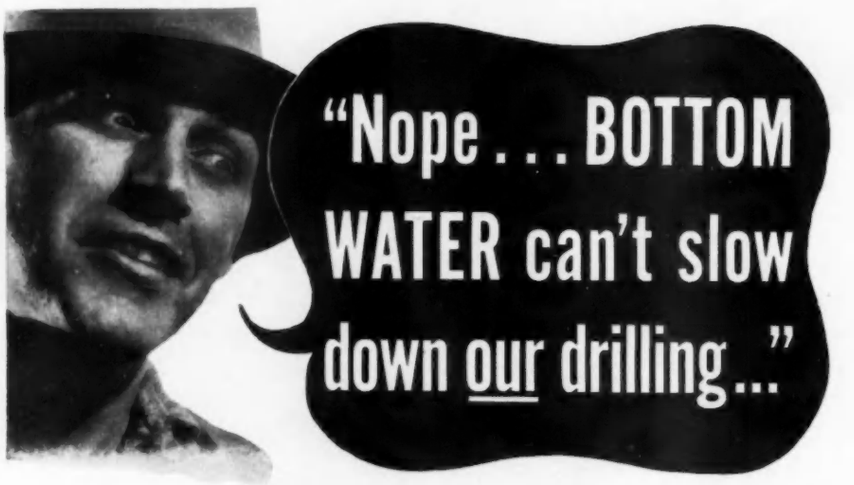
Sinclair Prairie Oil Company listed 2 completions in the Walnut Bend field, Cooke County, and has 3 additional wells in process of completion. All are on the east edge of the field. The company's Cox 1-A flowed 129 barrels potential from perforations opposite upper sand, with the hole bottomed at 4991 feet. Ramsey 5 flowed 363 barrels potential at 5011 feet, producing from sand below casing seat at 4991 feet and through perforations at 4782-97 feet, and Ramsey 6 flowed 81 barrels oil in 3 hours while running tubing to complete at 5051 feet. Sun Oil Company's Snuggs 10, near southeast edge of production, became the shallowest producer in pumping 80 barrels of oil in 4½ hours from perforations at 4037-55 feet, having plugged back by stages from 4921 feet.

Amon Carter et al's Allen 1, Western Denton County wildcat and the deepest test in the district, yielded muddy salt water when formation tester was used at 8665-9025 feet in Ellenberger dolomite, topped near the 8780-foot level. Pipe was perforated at 5324-45 feet with negative results, and plugging orders were awaited late last week.

J. G. Hammond, Inc.'s Jester 1, Montague County wildcat on the Mallard prospect, logged top of Barnett shale at 6850 feet, and was drilling at 6975 feet in limey-shale. Sullivan, Hill et al's Putnam 1, Tarrant County wildcat, entered the Barnett shale at 7138 feet, and was drilling at 7595 feet.

Bazette Field Rules

Operating rules for the Bazette field, Navarro County, issued by the Texas Railroad Commission last week, provide for standard 10-acre spacing.



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East Texas

West Extension at Hawkins Indicated Near Edge

Adequate oil saturation to make an oil producer was logged by A. A. Folsom et al's Prince 1, which is attempting to widen the Hawkins field 6900 feet west by north of the nearest townsite production. However, the low structural position of this outpost indicates that it is near the west edge of the structure. Prince 1 logged Austin chalk at 4356-4455 feet, with an elevation of 390 feet, and entered the Woodbine series at 4692 feet. Streaks of broken sand, carrying oil saturation, appeared in core at 4699-4717 feet, and additional saturated sand was logged at intervals in coring to 4861 feet. Electrical formation survey is to be made before casing the hole to try for production. Top of the Woodbine series is 304 feet lower on structure than the nearest townsite producer, but 64 feet higher than the discovery pumper, located three miles north.

Abandonment of W. L. Goldston et al's Osborne-Sun 1-A, northeast portion of H. S. Cobb Survey and 6300 feet south by east of nearest production in the Hawkins townsite, provides the fourth failure, including 2 drilled prior to production, in outlining the potential oil area. Osborne-Sun 1-A logged Austin chalk at 4498-4582 feet and top of Woodbine series at 4786 feet with an elevation of 301 feet. The test was halted in water sand at 4864 feet. Top of Woodbine series is 487 feet low in correlating with the nearest townsite well. The sharp drop in structure was not a surprise development, as Alex M. Synder et al's Holmes 1, A. N. McKnight Survey, 1¾ miles southeast of the townsite, logged Woodbine series at 5135-5330 feet, with an elevation of 338 feet, in completing as a failure in November, 1934. The new failure is 7000 feet west of Holmes 1.

The 3⅓-mile interval between the townsite wells and the discovery pumper on the northwest edge of the dome affords the longest stretch of virtually proved acreage. The only control to the northeast of the townsite involves the 3-mile northeast outpost failure completed last January by Johnston et al on the Green 40-acre site, J. P. Mosely Survey, with top of Woodbine series at 4773 feet, or 4407 feet subsea. Production is likely to extend reasonably close to the latter dry hole, as the Woodbine series marker is only 36 feet lower than the discovery pumper. Humble Oil & Refining Company's initial drilling program of 6 tests are on leases, ranging from 66½ to 181.76 acres. All are on a strike between the discovery and the townsite, except the largest which is in the southwest part of the B. N. Hampton Survey and 1½ miles southwest of the Green failure.

M. T. Flanagan and W. R. Nicholson's Hale 1, southeast corner of Isaac Brock Survey, northern Smith County wildcat and 5 miles southwest of Hawkins townsite, was abandoned at 5210 feet in water sand. Top of Woodbine series was tentatively picked at 5046 feet, with an elevation of 330 feet. This failure and that drilled south of Hawkins discounts the possibility of the productive limits of Hawkins extending across the Sabine River into Smith County.

Delta Drilling Company and Sells Petroleum, Inc.'s Beckham 1, Wood County wildcat on the flank of the Haynesville shallow salt plug, logged Austin chalk at 6620-6840 feet, with an elevation of 356 feet, and was drilling at 7260 feet. It is probably the lowest level established in the Woodbine basin, but is due to continue to the Woodbine for geological information.

Plugging orders were issued last week for Gulf Oil Corporation and Farrell Drilling Company's Bevill 1, Horn Hill prospect, Limestone County, after developing salt water from Pettit at 4747-4892 feet. The Travis Peak sandstone, which also indicated possible oil or gas production in recovered samples, yielded water at 4923-29 feet after plugging back from 5520 feet.

Productive limits of the Talco field were advanced westward when MacPherson Crichton et al's Haydon-Sun 1, W. Landrum Survey, Franklin County, flowed natural in pits from Paluxy at 4315 feet while awaiting storage. B. G. Byars et al's Rutherford-Sun 1, Wm. Lewis Survey, flowed at rate of 10 barrels oil hourly from broken sand at 4217-60 feet, having logged top of Paluxy at 4192 feet with an elevation of 380 feet. Magnolia Petroleum Company's Easterling 1, W. Landrum Survey, pumped 55 barrels oil in 3 hours from broken pay at 4276-4302 feet. Top of Paluxy was called at 4263 feet, or 3893 feet subsea.

Drilling in the East Texas field shows signs of subsiding after scoring a sharp revival beginning last mid-November when restrictions were temporarily lifted on well permits. The field has been among the most active in the Southwest the past 3 months, and currently has 20 drilling tests and a total of 54 operations. During this revival period, a total of 87 wells were plugged due to depletion of commercial production, and producing wells increased from a low mark of 25,911 to 25,967. The peak level on producing wells listed on the official proration schedule was attained during the week ending August 23, 1939, with a total of 26,061 wells.

Commission Calls Hearing on Dual Wells at Hawkins

The Texas Railroad Commission has scheduled a hearing for February 26, to determine whether dual completions should be allowed for wells producing in the Hawkins field, Wood County. Presumably the plan contemplates producing gas from the Sub-Clarksville and oil from the Woodbine.

Special operating rules for the Killam field, Webb County, have been set by the commission for hearing on February 24.

The commission has scheduled a hearing for February 25 on an application to amend its new water-well rule for the Saxet Frio sand in the Saxet field, Nueces County.

Amendments to the operating rules for the Sayles pool, Jones County, will be considered at a hearing scheduled for February 25.

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Southwest Texas

New Trend Toward Deeper Drilling Along Lower Coast

A new trend toward deeper exploration has prompted a drilling program along the South Texas Gulf Coast to sands below 10,000 feet. For the first time in the history of the district, a half dozen operations are active at that level or rapidly progressing to it. At the same time, a new 7300-foot zone was opened in a Nueces County field.

Continental Oil Company's St. Charles Company 3, on the St. Charles structure in Aransas County, was at 11,472 feet and testing sands above that level. Humble Oil & Refining Company's St. Charles 1, Tract 27 of St. Charles Bay, Aransas County, had progressed to below 10,200 feet. Baytex Oil Company and Atlantic Refining Company's T. O. McCullouch, in the McCampbell field, San Patricio and Aransas counties, was below 4200 feet on a project possibly to 10,000 feet. Humble Oil & Refining Company had the fourth deep well projected for the county, a submerged test to be drilled four miles from Aransas Pass and on either Section 245 or 246 in Aransas Bay. South of the Baffins Bay discovery well, Kenedy County, Skelly Oil Company's State 1, Tract 388, was drilling at 9500 feet. Stopping at 8472 feet to change drawworks, Humble Oil & Refining Company anticipates drilling to at least 10,000 feet in Flour Bluff State 6-D, submerged test in East Flour Bluff field of Nueces County.

This deep play is especially evidenced in 7500-foot or deeper tests, which are uncovering a multiplicity of sands, ranging down to below 7300 feet. The latest deep addition is Seaboard Oil Corporation's strike in the Luby field, Nueces County. Originally completed at 5068 feet, the test was deepened to 7313 feet and casing set on bottom. Perforations were made at 7310-12 feet and the well flowed 150 barrels of 37.2-gravity oil per day. The test was through ⅛-inch choke, pressures standing at 1575 pounds on tubing and 1800 pounds on casing. The water was .2 percent and gas/oil ratio 1210/1. Several miles west of the above well, Stanolind Oil & Gas Company was coring for the same sand in Kathering L. Shaeffer 1, a wildcat.

Value of the George West Ranch block in Live Oak County was materially enhanced last week when Edwin M. Jones' latest exploration resulted in a gas show at 6990-7000 feet in the Queen City zone of the Mount Selman. On a drill-stem test, tool leaking, the recovery was 18 stands of gas-cut mud and 150 pounds pressure in 15 minutes. The well was drilling below 7500 feet, going to the 8389-foot level where Jones' West 2-B recently blew out and made gas and distillate. The latter sand is in the Wilcox formation. The new test is several miles farther west and is in the Nelson Owen Survey, Section 56.

In Goliad County, W. R. Davis Company has plansto drill W. F. Albrecht 2-C, in the Weser field, to at least 8000 feet to test Wilcox sands. It was drilling below 5935 feet. The field's Cook Mountain sand is found at 5300 feet.

Shell Oil Company's Plow Realty Company 1, 1500 feet northeast of the Sheridan field discovery in Colorado County, was preparing for a series of production tests above 9500 feet, approximately level of the seat of 5½-inch liner. This would be 1500 feet below the top of the Wilcox zone. The field's present producing level is at 8200 feet in the Wilcox.

At least three new sands were uncovered in the newly discovered Nichols field of Hidalgo County this week by Baldridge & King, drilling contractors, who sunk the first operation on the structure several months ago. That well was drilled under contract for Royal Oil & Gas Corporation. The new Baldridge & King test is Yturria Town and Improvement Company 2, 660 feet east of the discovery. It found the regular field pay at 3458-70 feet, the second sand at 3504-12 feet, both carrying sufficient oil shows to indicate commercial wells. It was drilled ahead, however, finding sands with oil shows at 3646-88 feet, 3736-46 feet and 3798-3808 feet. Each was tested and recovered enough oil to assure production.

Preparations were under way as the week closed for completion of a second well in the Willamar field of Willacy County. Pan American Production Company's Willamar Community 1-B, 1015 feet southeast of the discovery, had made squeeze jobs at 7830-40 feet and 7880-90 feet and perforations will be made between these points. One mile northwest of the discovery well, the

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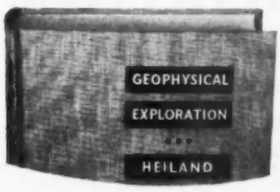

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company's Kent 1, Share 13, drilled to 8105 feet without finding the field pay and was awaiting orders.

Two attempts to widen the Rincon area and merge it with the North Rincon field of Starr County seem to be of no avail. Arkansas Fuel Oil Company found oil shows in salt water sands to its contract depth of 5600 feet in F. P. Martinez 1, Section 127. The well is 1¼ mile southeast of North Rincon field. Transwestern Oil Company's W. I. Cameron 1, 1½ miles north of the Rincon pool and in Survey 137, tested salt water through perforations at 4752-4766 feet and 4548-4551 feet and had made a squeeze job.

Sun Oil Company recovered salt water in sand topped 4772½ feet in E. Trevino 1, one mile south of the Kelsey field, and abandoned at 4836 feet. Rig was skidded 1400 feet west for Trevino 1-B.

Texas Permits

The Texas Railroad Commission last week issued permits for drilling 225 wells, 46 more than were authorized the previous week.

There were six permits granted in the East Texas field, with two in Rusk, two in Upshur, one in Smith, and one in Gregg County. From the remainder of East Central Texas area, 19 permits were reported.

Holding first place in the state was the Southwest Texas District with 51 locations, including 10 in Nueces County, while Gulf Coast operators reported 19 locations.

The commission ganted permits for 28 wells in West Central Texas, 47 in West Texas, 43 in North Texas and 12 in the Panhandle.

Texas Gulf Coast

Magnolia Prospect Furnishes District's Second 1941 Field

Superior Oil Company of California made to East Magnolia prospect of Montgomery County the second oil field of 1941 for the upper Texas Coast and the second Wilcox strike in the sector in more than two years. McWhorter 1, T. J. Nichols Survey, 7 miles east of Magnolia, flowed an estimated 175 barrels of 39.2-gravity oil daily through 12/64-inch choke from 8930-35 feet on a drill-stem test which registered 2250 pounds pressure. On ⅛-inch top and ¼-inch bottom chokes, the sand flowed 75 to 100 barrels of 38-gravity oil under 2000 pounds pressure, with 500,000 feet of gas daily. Operators were erecting separator, preparing to running tubing for completion in this zone, which was one of four with strong production possibilities. On dual test of perforations at 8828-35 and 8855-77 feet, the well flowed 90 percent salt water, 10 percent oil, with 1,000,000 feet of gas daily through ¼-inch choke, with pressures 1450 and 2200 pounds.

On a separate test of the lower section flow was 1,500,000 feet of gas daily, with small amount of oil. Packer failed, and dropped 56 stands of tubing into hole while attempting test at 8828 feet. Operator drilled out cement after recovery of tubing and perforated 8907-12 feet, where flow was 300,000 feet of gas and 50 barrels of distillate daily on short drill-stem test. The 8930-foot level was then tested to reveal certainty of production. The wildcat, which has been delayed many times because of floods and mechanical difficulties, found sands in the Wilcox, topped at 8465 feet, to be practically continuous, with nearly all showing evidence of saturation. Untested sands were logged below the last tested level. The wildcat is the second well to be drilled to the Wilcox in Montgomery County, and will stimulate activity on this trend, where no outstanding success has been scored since discovery of the Segno Wilcox in April, 1938. Superior Oil Company is in a favorable position, holding 4000 acres around the well broken only by a west offset tract held by Stanolind Oil & Gas Company and Amerada Petroleum Corporation, and acreage to the north held by Sun Oil Company and Atlatl Royalty Company. Structure is said to be of low relief, about 100 feet, and extending over 1000 acres.

Sharing interest with the East Magnolia discovery was Strake Petroleum Corporation's Griffith 1, Cayce Survey, Brazoria County, 3 miles southwest of Alta Loma field, which indicated one of the highest, if not the highest, bottom-hole pressures on record by registering 6500 pounds at surface with 15-pound mud in the 10,333-foot hole. Operator compounded mud pumps and cementing pumps to fight the extreme pressure and avert a blowout while enough control equipment was installed

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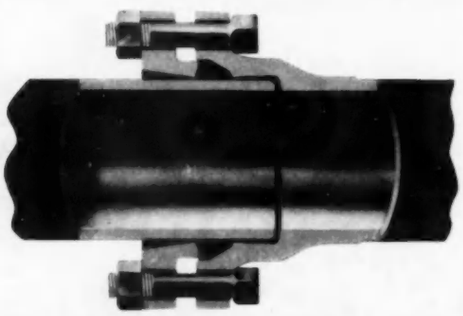

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to run a drill-stem tester. This test has verged on blowout almost constantly since 8100 feet, and $23,000 worth of mud and weighting materials have gone into the hole, all of which will be lost it the well blows out. The wildcat, on the down-dip downthrown side of a fault, topped intermediate markers 700 feet lower than wells at Alta Loma, and showed an apparent Marginulina interval 450 feet greater than that at Alta Loma, topping Frio at about 10,288 feet, where a rainbow of oil showed on pits. Electrolog was run and 7-inch casing landed at 10,325 feet. It was while recovering core from 10,333 feet that a blowout became imminent.

Chenango Offset

More information on the Chenango field, Brazoria County, the first 1941 discovery in the upper Texas Coast, will be obtained from Christian 2, J. Newton Rayzor's south offset location to the discovery. A week ago, Rayzor's Christian 1, Wm. Parker Survey, gauged 453 barrels of oil and 150 barrels of salt water daily through ¼-inch choke, with tubing pressure 865 pounds, casing pressure 1200 pounds, from Frio at 8566-74 feet. The confirmation test will probably investigate the promising 8350-foot sand logged in Christian 1, and is expected to go much deeper. Other companies, including Sun Oil Company, The Ohio Oil Company, Gulf Oil Corporation, and Stanolind Oil & Gas Company, are considering acreage or drilling deals, with no other locations announced.

Phillips Petroleum Company has tested three new sands at League City, Galveston County, without definite success, as only gas has shown so far from zones at 10,625 to 10,915 feet. Operators continued to test in the 11,402-foot hole, as the north outpost, although finding water in the regular Frio sands, logged a number of new ones. Bottom is at 11,402 feet, near the point from which the company's Stetwart Title Guaranty Company 1 blew out over a year ago. The company completed Lobit 9, south edge test, as a normal producer.

The Dyersdale field, Houston area, Harris County, will probably vie with Old Ocean as the greatest concentration of activity in the district during the next few months, as Jack Frazier made definite location for three tests, and tentative locations for seven others. This 4150-foot Frio area is expected to provide 20 to 40 completions during 1940, with one or more flanking wildcats to be drilled soon.

Two Wilcox wildcats failed. R. A. Irwin and A. G. Muench quit Schoenfeld 1, R. O. Lusk Survey, west of Magnolia, in Grimes County, at 8205 feet after Wilcox sands were found to be low in permeability or high in salt water content. A soft Wilcox sand was found at 7850-69 feet, showing gas and distillate. In the Cold Spring area, San Jacinto County, McDannald Oil Company left U.S.A.-Foster Lumber Company 1, Taylor Survey, at 8000 feet after finding salt water in all Wilcox sands. In the Willis area, Montgomery County, O. C. Garvey drilled Horn 1, 9000-foot Wilcox test, out of surface casing. In the southern wildcatting belt, Cities Service Oil Company was reported below 8560 feet in Duffy 1, three miles south of the Blessing distillate field, Matagorda County, with the 8300-foot Blessing Frio sand not encountered. Stanolind Oil & Gas Company set protection casing at 6550 feet in Huebner 1, wildcat 2 miles west of the South Bay City field, Elisha Hall Survey, and will drill out to projected depth of 10,500 feet.

Wildcat locations included J. M. Campbell's Buxbaum 1, two miles west of Westfield, Harris County, in the M. Tarin Survey, a 6500-foot Cockfield test on sub-surface picture. R. O. Lowrance and Lon Cron prepared to spud Juhl 1, 6500-foot Frio test southwest of Danevang, Wharton County. Dishman & Lucas staked Robertson 1, 7500-foot Cockfield-Yegua test in Tanners Bayou area, 7 miles north of Hardin, Liberty County, while J. Nye Ryman located Texas Gulf Sulphur 1, 850-foot test northeast of Matagorda, in Matagorda County.

Ask Rule Revision for West Ranch Field, Jackson County

Magnolia Petroleum Company has requested the Texas Railroad Commission to revise its operating rules for the West Ranch field, Jackson County. Humble Oil & Refining Company and Darby Petroleum Company joined the request.

Request was for a 1200-pound test on the oil string, instead of the 2000-pound test now provided in the rule. However, the principle question was distribution of allowables. Proration on acreage and per-well, with 75 percent on acreage was asked. The field is prorated on acreage and potential with 50 percent on each factor.

This program was protested by Lonnie Glasscock, who said that his allowables would be reduced by the plan.

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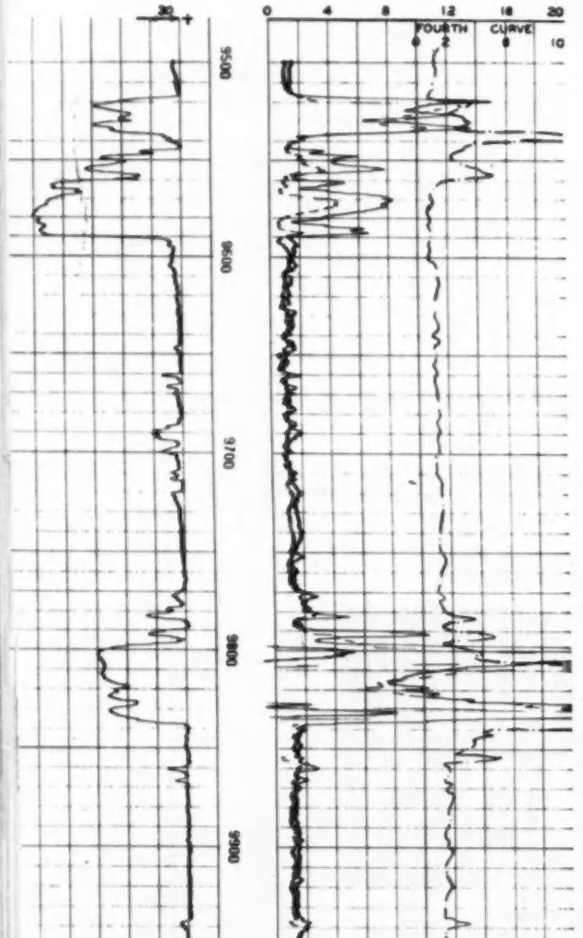

South Louisiana's second 1941 discovery is expected to be made in the 10,050-060-foot section shown on the electric log of Lisbon-Iberia Oil Company's Calcasieu National Bank 1-A, in the Lakeside area, Cameron Parish. Initial tests, now being repeated, recovered 53-gravity distillate. Upper sands shown have not been tested.

Lowry Test Promises Strike in Distillate Sand at 10,050 Feet

Opening of a new field, second for 1941 in the Louisiana coastal sector, was imminent at the Lowry, or Lakeside prospect, northwest of Grand Lake, Cameron Parish, where Lisbon-Iberia Oil Company plugged Calcasieu National Bank 1, Section 19-12s-4w, from 10,685 to 10,075 feet for a test of the 10,050-060-foot level which indicated distillate production on initial test. Three weeks ago the well made 210 barrels of 53-gravity distillate in 76 hours, via various chokes, with pressures varying from 2500 to 3100 pounds. The wildcat logged saturated sands at 8730-48, 8220-8228, 9518-60, 9798-9840, and 9972-10,060 feet. All sands show gas caps, with only one, at 9518-60 feet, showing the oil water contact. Calcasieu National Bank 1 will probably be completed as a distillate well, while drilling farther down dip is expected to provide oil wells. The test had a gas blow at bottom that stuck drill pipe, only part of which was recovered. Superior Oil Company is the major close-in leaseholder by virtue of a $50,000 purchase of 1500 acres from Lisbon-Iberia Oil Company. The wildcat is the fourth test on an old Pure Oil Company prospect, that company having drilled the previous three.

The St. Gabriel prospect, Iberville Parish, may also be an oil field before the week is over. Titanic Oil Company ran casing to 9026 feet, and was waiting on cement to test Natalbany Lumber Company 1, Section 7-9s-2e, near the Mississippi River. The wildcat cored gas and distillate sand at 6875-98 feet, and oil sand at 7752-7800 feet. Electrolog showed three additional sands below 7700 feet, last of which is apparently the sand found near 9000 feet in Shell Oil Company's Natalbany Lumber Company 1, dry hole ¾ mile southeast. The Titanic Oil Company test, Shell Oil Company farmout, was checking 200 feet high compared with the dry hole. First section tested will probably be the 7752-foot oil sand. Shell Oil Company discovered the prospect in 1936 with reflection seismograph, and drilled two failures, each of which attempted blowout from 9000-9200 feet and were credited with strong production possibilities. The original shooting picture was said to show 400 feet of closure, with a stiff drilling obligation being the only factor retarding development.

Gulf Oil Corporation's Buras Levee Board E-2, Section 35-22s-30e, confirmation test in the West Bay field, recent Plaquemines Parish discovery, blew out a week ago to become the most spectacular wild well on the Gulf Coast since the Alta Loma discovery. Blowout came from discovery sand at 7286 feet while operator was reaming. The well caught fire almost immediately and burned for 12 hours before a head of shale bridged the hole and stopped the fire. The well continued to blow for 3½ days, making dry gas almost entirely, until professional firefighters, working mostly from boats, succeeded in capping it and pumpin in mud. The hole and drill pipe was not harmed, although the derrick was melted, and operations will be resumed as soon as new derrick is erected. Tide Water Associated Oil Company's State 1, northeast of the wild well, was shut down at 3300 feet until the blow was controlled.

Amerada Petroleum Corporation scored a small north extension on the west side of Eola, Avoyelles Parish Wilcox field, by completion of Vernon 1, Section 46-1s-2e, for 251 barrels of 41.7-gravity oil and 55 barrels of fresh water daily via 3/16-inch choke, with tubing and casing pressures 1500 and 1100 pounds. Perforations were made at 8557-63 feet. Continental Oil Company was expected to make a major north extension to South Roanoke, Jefferson Davis Parish, with Jaenke 1, Section 24-10s-4w, which made 60 to 80 barrels of distillate daily from 8504-20 feet. Bottom is at 11,535 feet.

Stanolind Oil & Gas Company found a new flank sand at Jennings, Acadia Parish, with Crowley Oil & Mining Company 119, Section 48-9s-2w, completed at 7633-61 feet for 296 barrels daily via 15/64-inch choke, with tubing and casing pressures 400 to 1650 pounds.

Superior Oil Company drilled past 9650 feet in St. Martin Land Company 1-B, Section 20-9s-7e, confirmation test for the Section 28 (Hager-Martin) Dome, St. Martin Parish, in search of deep sands. Discovery level, 9340-72 feet, was broken, showing gas and distillate. Casing was landed at 9503 feet. The discovery, Stuart 1, 830 feet south, was completed late in 1941 for 57-gravity distillate from 9330 feet. This dome has resisted attempts to establish oil production longer than any known salt-core structure in South Louisiana, being proven for domal material in 1917. The company was drilling past 5600 feet in Rycade 6, Section 19-9s-9e, southeast flank test at Bayou Bouillion, after running 7-inch protection casing to 5525 feet.

North Louisiana

Lisbon Outpost Sets New Depth Record for Area

Union Producing Company's Meadows A-1, C NE 18-21n-4w, Claiborne Parish, late last week was drilling shale wtih streaks of lime at 11,807 feet, to set the record for depth in North Louisiana. The previous record was held by R. W. Norton's Payne 1, SE SE 27-23n-16w, Caddo Parish, Rodessa district.

With elevation of 241 feet, Union Producing Company's test, 2½ miles north of production at Lisbon, logged massive anhydrite from 3762-3974 feet; topped Travis Peak at 5120 feet and topped Lower Marine at 7421 feet, and showed for a gas well in the Smackover lime at 10,394 feet, first test to show for such production in North Louisiana. This test also cored saturated basal Glen Rose lime at 5009-14 feet and an oil sand at 5141-44 feet, with several showings in the Lower Marine.

Haynes B. Ownby's Ozley C-1, NE SE 7-19n-5w, apparently too far up on the structure to find oil in the Travis

Peak in the Sugar Creek field, Claiborne Parish, was a gas well, as yet ungauged, at 5820 feet. The Travis Peak oil section around the flanks of the Sugar Creek dome is apparently limited in extent.

On the northeast flank at Cotton Valley, Webster Parish, Hassie Hunt's Childs 1, SW SW 20-21n-9w, was perforated with 60 shots at 8554-64 feet and was making oil and wash water.

A northwest outpost in the shallow Bellevue field, Bossier Parish, drilled to 3035 feet, was abandoned. It is Roy L. Reese and associates' Bellevue Land Company 1, NE SW 27-20n-11w. Bellevue is a truncated dome, with the Nacatoch found at 300 to 400 feet.

Union Producing Company is reassigning to J. P. Evans considerable acreage it secured from him in the Dubberly-Sibley gas/distillate field, Webster Parish, the acreage being in township 18 north, range 8 west. Evans discovered this field in 1936.

Ten new locations were staked last week in North Louisiana.

On the Shelby County, Texas, side of the Logansport-Joaquin gas field, Southern Production Company completed its third wet gasser. The new well is Price 1, White Survey, completed in the Glen Rose at 4937 feet, making 116,000,000 cubic feet daily.

Arkansas

Stevens Northwest Edge Test Has Show From Travis Peak

Turner & O'Farrell's Smart 1, SW SW 12-15-20, 6050-foot deep test on the northwest edge of the old shallow Stephens field, Columbia County, which was plugged back to 3600 feet, was flowing small stream of oil, with considerable wash water last week, after casing was perforated with 24 shots in the Travis Peak from 3417-25 feet. Gravity of the oil is 31.2 API corrected. Should this be a commercial well, it will be the first time that the Travis Peak has been found productive in South Arkansas. The shallow Stephens field, producing from 1900 to 2100 feet, was discovered in 1921 and still has some stripper wells.

The definite defining of producing limits to the east in the Magnolia field, Columbia County, which has been anticipated for some time from the picture of the structure, occurred last week when Louark Producing Company's D. E. Booth Unit C-1, NE NE 20-17-19, was abandoned at 7626 feet, after electric log was run. Elevation is 242 feet. Location is 1½ miles west of the Village field, whose western limits were defined several months ago. Abandonment of this test left Magnolia without an active location. It was discovered in March, 1938, and has 116 oil producers. Only the southeast edge remains to be defined.

The tenth producer for the Dorcheat field, Columbia County, loomed at Shell Oil Company's Keith 2, SW SE 9-18-22, which logged top of the Smackover lime porosity at 8822 feet and cored to 8868 feet. Elevation is 219 feet. McAlester Fuel Oil Company made a location in this field last week, having added the field's ninth oil well the week before. Buckner has one drilling operation as does the Atlanta field. The McKamie field, LaFayette County, added one new location during the week. It already had three drilling operations and one other active location.

Southeastern States

Two Large Oil Wells in Southeast Tinsley Dome

The southeast part of the Tinsley Dome field, Yazoo County, Mississippi, continued last week to be the main center of interest in that area, two of the largest wells of recent weeks being completed in that part of the field. Three wells comprised the week's total there. A wildcat in Montgomery County was abandoned.

At Tinsley, Hassie Hunt's G. W. Stutts 1, C NW SE 30-10n-2w, which topped chalk at 4911 feet and the Woodruff at 4982 feet, was washed in flowing 40 barrels per hour through ½-inch tubing choke. Elevation is 359 feet. Love Petroleum Company's George Stutts 1, NW NW NE 30-10n-2w, which topped black shale at 3955 feet and Woodruff sand at 4919 feet, elevation 339 feet, was washed with water and completed flowing 280 barrels in 4¼ hours through 23/64-inch choke. The field's other completion was Union Producing Company's Florence Harris 5, NE 25-10n-3w, swabbed in for 113 barrels of oil in five hours through 5/8-inch tubing choke, with tubing pressure 100 pounds and casing pressure 125 pounds.

A meeting of the Mississippi Oil & Gas Board February 7, at Jackson, continued requests by J. F. Barbour, Jr., Yazoo City, for a suspension of the 40-acre space rule at Tinsley Dome. He sought to drill a test on a 2.23-acre unit in Section 19-10n-2w. The board took under advisement an application of R. J. Whelan for permits to drill three tests at Tinsley Dome on railroad right-of-way. The board also postponed action on application of R. T. Sellers and D. H. Sanford, of Jackson, to drill on a small strip of land 38 x 125 feet in Section 30-10n-2w.

Stanolind Oil & Gas Company was taking a wildcat block in Townships 6 and 7 north, Range 12 west, Newton County. The Texas Company had a seismograph unit working in Marion County, southwest of Columbia, and has begun to lease in that area.

Arkansas Permits

Three drilling permits were authorized last week by the Arkansas Oil & Gas Commission, as follows: Miller County—Louark Producing Company's E. J. Hedrick et al 1, C SE NE 27-19-27; Union County—J. D. Reynolds' Laney Estate 1, SE NE NW 8-16-16, and Laney Estate 2, SW NE NW 8-16-16.

Louisiana Permits

Twenty-four drilling permits were issued last week by the Louisiana Department of Minerals, of which 14 were in North Louisiana, divided among the following parishes: Bossier 1, Caddo 7, Claiborne 1, Catahoula 1, Grant 1, LaSalle 1, Sabine 1 and Webster 1. The 10 in South Louisiana were divided among the following parishes: Acadia 2, Evangeline 4, Iberia 1, LaFourche 1, Plaquemines 1 and Vermilion 1.

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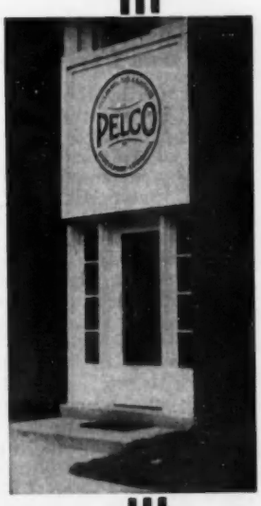

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California

Stevens Believed New Zone In Kern's Paloma Field

Western Gulf Oil Company opened a new producing zone in the southeastern area of the Paloma field, Kern County, with KCL B-12-12, outpost in Section 12-32-26. Cored to 10,534 feet in sandstone and shale, a new sand body, believed to be the Stevens, was encountered between 10,269 feet and 10,520 feet. Formation test resulted in fluid to surface in 25 minutes, well making oil and gas which at the end of two hours flowed at 570-barrel daily rate of 53-gravity oil cutting 0.2 percent with 3,930,000 feet of gas. Flow was through ⅜-inch bottom-hole bean, and quarter-inch surface bean. Well was allowed to flow 13 hours, and then killed to core ahead.

Hancock Oil Company was preparing to spud its second well in the Union Avenue area of Kern County. Discovery well, Roberts 1, brought in about two weeks ago, continues to make about 100 barrels daily of 14.7-gravity oil on the pump. Analysis of the oil shows no gasoline content. Company plans to carry out a unit plan of development, limiting drilling to one well to ten acres.

In the Huasna area of San Luis Obispo County, Tex Harvey Oil Corporation's Gilmore Community 1, wildcat in section 11-32-14, which has been pumping oil and water for a period of several weeks on production test, is reported making about 20 barrels daily of 25.3-gravity oil, together with about 50 barrels daily of fresh water. Bottomed at 4518 feet, water string was set at 3512 feet. From 3600 feet to bottom, operator reports formation carries large percentage of Bentonite which has interfered with successful completion of well. A second well is planned which will be drilled through the Bentonite zone with oil to eliminate the water difficulty. Water dissolves the Bentonite, causing it to settle down around liner perforations and seal off production.

Kern Line Oil Company's No. 1, wildcat in Section 19-11-19, Grapevine area of Kern County, recovered 21 stands of brackish water on formation test along with a faint blow of gas. Well was bottomed at 8290 feet, with water string set at 8200 feet. Operator may acidize, and make another attempt to place the well on production.

In the Ten Sections field of Kern County, Shell Oil Company has completed KCL A54-29, flowing 2487 barrels daily of 33.4-gravity oil and 2,270,000 feet of gas. The test was bottomed at 8235 feet. In the Ventura Avenue field of Ventura County, Taylor 132 has been placed on production from 8255 feet, flowing 2667 barrels daily of 30.5-gravity oil and 1,988,000 feet of gas. Company is currently operating eight drill strings in various California fields.

Michigan

Way Cleared for Michigan's First Gas Field Storage

Approval by the Securities Exchange Commission of the purchase by Michigan Consolidated Gas Company, subsidiary of American Light and Traction Company, of the Austin gas field, Mecosta County, Michigan, will bring the first use of a field for natural gas storage purposes in Michigan.

The field was purchased from Taggart Brothers, Big Rapids, for $825,000, which included about 4000 acres and well equipment. Taggart Brothers owned 83 percent of the field in fee, and all of the wells. The other leases were secured through 30-year contracts, including lump sum payments for royalty.

The field had an original estimated reserve of eleven billion feet of gas in a stray sand formation at depths of 1400 to 1600 feet. About 6 billion feet has been produced. Starting this summer, Michigan Consolidated Gas Company plans to repressure the field with gas from the Lake George field, both for test purposes and to set up a reserve for peak demand periods for Grand Rapids and Muskegon markets.

The program, reported to involve about $3,500,000, includes construction of an 18-inch pipe line from Detroit to the Austin reservoir field, about 150 miles. Detroit for four years has been using natural gas piped in from the southwest by Panhandle Eastern Pipe Line Company. Use of the field as a reservoir during the low demand periods of the summer is expected to not only meet the problem of handling peak loads, but will provide a safety factor for Michigan outlets supplied by the comparatively small-reserve Michigan fields.

Whether a current campaign in Detroit for municipal ownership of the gas distributing system will affect the plan is uncertain. The Detroit city council already has urged ousting of Michigan Consolidated Gas Company, and further action now awaits on results by ballot this spring.

Roscommon Wildcat Loses Oil Show on Casing Hole

Eugene Hilliard's State 1, Section 19-21n-3w, Roscommon County wildcat, first test to show free oil in the district, appeared to have only an outside chance of making a commercial well after being cased and deepened. It logged Dundee at 3941 feet, structurally high, and carried a good show at 4045-47 feet. After running a production string, hole was deepened to 4107 feet where a small amount of water was logged. After running the pipe, the oil pay apparently was lost or cased off. It was shut down for orders.

Sun Oil Company shut down at 5231 feet on McIntosh 1, C S½ SW NE 16-19n-3w, Clare County, to wait for a new 6000-foot drilling line. Drilling probably will be resumed next week for an undetermined depth. The Sylvania sand, which has shown both oil and gas but which has not yet furnished a commercial producer, is the objective. Normally, another 300 feet should enable a test of the sand.

Gulf Refining Company resumed fishing for drill pipe in Bateson 1, Section 2-14n-4e, Bay County, after a five-day shutdown for a new string of 4½-inch drill pipe. About 4300 feet of the old string has been recovered from the state's record depth hole, 7776 feet. The full string originally was in the hole where it was backed off and set down following a blowout November 28, with the well firing a week later.

Rocky Mountain States

Powder Wash Field Limit Extended One Mile Southeast

A mile southeast extension of the Powder Wash oil and gas field, Moffat County, northwest Colorado, was made by the Mountain Fuel Supply Company's D. W. Musser 2-A, CWL NW SW 4-11n-90w, which yielded 18,000,000 feet of gas daily in the Wasatch sand of Tertiary age. Production was obtained at 2494-2504 feet, with 7-inch string set at 2994 feet. Two other gas wells and two oil wells have been completed in the field.

Under the stimulus of a better market for black oil created by reduced freight rates, one well in a series of a dozen or more scheduled for drilling in the Oregon Basin field, Park County, Northern Wyoming, got under way last week. The Enalpac Oil & Gas Company was drilling at 772 feet with rotary in Cactus OPC-3 1, CSW SE SE 5-51n-100w, after cementing 10¾-inch casing at 599 feet.

In the south fault block area of the Garland field, Valentine Kirk et al were drilling at 263 feet in Mann 1, SW SW SW 11-55n-97w, Park County, Wyoming. The well is a two-mile extension attempt to production in the Garland field.

The Minnelusa Oil Corporation was considering deepening of Joss 4, CSW NE SW 6-35n-65w, outpost location on the west side of the Lance Creek field, for a test of the Bell sand and possibly the Madison although failure in the prospective deep sands would not condemn the lower horizons, commercial production would stimulate another drilling campaign in the Lance Creek field, which for the past five years has been the most active area in Wyoming. Joss 4 was shut down, waiting on decision to deepen or abandon after developing five barrels of oil and 150 barrels of water in nine hours testing in the Leo sand at 5474 feet.

Ask 20-Acre Spacing for Archer County Area

Standard 20-acre spacing for wells in the Vogtsberger area, Archer County, was requested at a hearing before the Texas Railroad Commission last week by Gant & Medders.

Tom Medders, representing the applicants, asked an allowance of one well to 40 acres, with a maximum of 50 acres assignable to the final well on a lease for proration purposes. He wanted the allowable assigned on acreage and per-well, with 50 percent allocated on each factor.

UNITED STATES WELL COMPLETIONS

Arkansas

Columbia County (Magnolia)—
Louark Prod. Co., Booth Unit C-1, 20-17-19 ..... * 7626
Nevada County (Wildcat)—
Coker & Grieves, Thompson 1, 35-10-22 ..... * 1207

California

Fresno County (East Coalinga Eocene)—
Standard, 2-19F 1968 7810
Fresno County (Kettleman Hills)—
Standard, No. 4-35J 1810 8780
Kern County (Coles Levee)—
Richfield, KCL-A 25-28 ..... 695 9340
Kern County (Round Mountain)—
Crestmont Oil Co., Russell 1 ..... * 1845
Kern County (Ten Sections)—
Shell, KCL A-54-29 .....No Est. 8235
KCL A-65-29 .....2640 8235
Kern County (Wasco)—
Standard, Mushrush 6 .....3136 13,130
Los Angeles County (Castaic)—
Western Gulf Oil Co., Lechler 1 (pb 2415) 100 2442
Los Angeles County (Aliso Canyon)—
Tide Water, Porter 23 ..... 456 5275
Los Angeles County (Mint Canyon)—
Redwood Oil Co., Mitchell 2 ..... * 1580
Los Angeles County (Potrero)—
Basin Oil Co., Potrero 10..... 355 4085
Los Angeles County (Santa Fe Springs)—
Hathaway Co., Jalk 116 ..... 80 4617
Los Angeles County (Wilmington)—
Bolling Oil Co., Well 4 .....No Est. 3706
Coast Line Oil Co., No. 3 ..... 110 3710
Harper & Murphy Oil Co., C.H. 1.. 90 3632
Long Beach Oil Dev. Co., "W" 19 486 4165
Union Pacific, UP 162 .....1100 4043
UP 172 ..... 396 2865
Orange County (Huntington Beach)—
Signal O&G, Signal Bolsa 1-A 192 4810
Signal Bolsa 22-A 609 4451
Southwest Exploration Co., State 35 336 4761
Santa Barbara County (Elwood-Coal Oil Point)—
Texas, Bishop A-2 ..... * 3025
Ventura County (Oxnard)—
Texas, Montgomery 1 ..... * 7387

*Failures; †Junked; ¶Million cu. ft. gas.

Ventura County (Simi)—
Robert Cannell, Robertson Core-hole 1 ..... * 1200

OLD WELLS DEEPENED

Los Angeles County (Long Beach)—
Hilldon Oil Co., Pool 1 (otd 4100) No Est. 5614
Los Angeles County (Wilmington)—
Wilton Oil Co., Wilmington 1 (otd 2897) 100 3700

Illinois

Bond County—
Vancroft et al, Murray 1, ne sw se se 8-5n-4w ..... * 902
Clay County—
Pure, Weller 10, c e½ se se 33-3n-8e 22 2630
Champaign County—
J. Wall, Baird 1, nwc 9-18n-10e.... * 1180
Clinton County—
Niehoff et al, Maddox 1, sw se nw nw 22-1n-3w..... * 1202
Effingham County—
Hinkle, Gibson 1, nw se nw 22-6n-5e * 2551
Edwards County—
Tide Water, Gawthrop 1, nec 13-1n-10e 46 3325
Meyers Dr. Co., Wick 1-A, nwc 24-2s-10e ..... * 2383
Fayette County—
Magnolia, Clow 40, sw sw nw ne 5-7n-3e 400 1551
Carter, Miller 5, sw sw ne 17-7n-3e 314 1580
Franklin County—
Taylor Dr. Co. et al, Malkey 1, sw ne se se 13-6s-2e..... * 2220
Gallatin County—
Cameron Bros., Green 1, nw se sw 4-8s-8e (PB 1718)..... 42 1720
Snowden-McSweeney, Egyptian 1, se sw se 18-8s-10e..... * 2818
Hamilton County—
Exchange, Silliman 1, sw nw nw 35-3s-5e ..... * 3489
Carter, Friel 6, swc se 27-5s-6e.... 206 2963
Exchange, Friel "C" 15, sec sw 34-5s-6e 307 3054
Ohio, Matheny 2, ne nw se 3-6s-6e. 264 3068
Moore 1, se ne sw 3-6s-6e (PB 3077) 265 3083
Texas, Edwards 4, sw ne ne 3-6s-6e (PB 2948)..... 137 3055
Hood 6, sw nw ne 3-6s-6e..... 180 3053
Hood 8, nw sw ne 3-6s-6e..... 300 3058

Jasper County—
Pure, Shin 3, c w½ se nw 8-5n-10e. 662 2847
Johnson O. & Ref. Co., Huddleston 1, c s½ sw ne 9-8n-10e..... * 2557
Jefferson County—
Whisenant-Trenchard et al, Grant 1, nwc sw 29-3s-3e..... * 2865
Lewis et al, German 1, nw sw nw sw 15-2s-1e..... * 2313
Monroe County—
Judal, Schuler 2, nw sw nw se 11-2s-10w 10 474
Richland County—
Pure, Cavins 1, c e½ se sw 36-5n-9e * 2950
Shelby County—
Brunsvald, Yantis 1, sw nw nw 36-13n-3e ..... * 3061
Wabash County—
Shell, Ripley 1, ne se ne sw 17-1s-12w 554 2361
Evarts, Williams 1, se swc ne 1-1n-12w (PB 2030)..... 40 2032
Broadus, Epler 3, ne nec 31-2s-13w (PB 2501)..... 15 2513
Washington County—
Arrow Dr. Co. et al, Borrenphol 1, sw sw nw 34-1s-5w..... * 1060
Wayne County—
M. I. O. U. Co., Fox 1, c w½ sw sw 3-3s-8e..... * 3521
Diamond-Half, Hann 1, c n½ sw se 35-1s-7e 84 3249
White County—
O'Meara et al, Hon 1, se sw ne 32-3s-14w ..... * 2818
Arrow Dr. Co., Hon "B" 2, sw ne sw 33-3s-14w..... 100 2631
Burgen, Kramer 1, se sw ne 36-3s-8e * 3517
Tide Water, Evans 4, nw ne nw 4-4s-14w 85 2906
Babler, Hon 1, nw ne se sw 9-4s-14w (PB 2856)..... 600 2861
Hon 2, nw se sw 9-4s-14w..... * 2233
Delta Dr. Co., Boltinghouse 1, nw ne nw 16-4s-14w..... 150 2861
Gray, Fee 1-A-H, nw ne ne 20-4s-14w 100 2593
Skelly, Crossville 2, ne nw ne 20-4s-14w 75 2718
Crossville 3, ne nw ne 20-4s-14w. 130 2600
Superior, Given 1, sw nw sw 34-4s-14w 180 2739
Bell Bros., Morris 1, nw sw nw 21-5s-14w 116 2373
Everts, Brown 1, se ne nw 29-5s-14w * 2778

[*Continued on next page*]

Summary of Drilling Operations in the United States, Week Ended February 15, 1941

	WELLS COMPLETED								PERMITS FOR NEW WELLS*				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	Initial Production	‡Miscellaneous	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Arizona	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Arkansas	2	....	....	2	.....	....	18	27	3	6	19	10	153
California	26	21	....	5	14,659	....	151	160	15	63	116	152	1,102
Colorado	.....	....	....	....	.....	....	....	2	....	.....	....	.....	.....
Florida	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Georgia	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Illinois	59	31	....	19	7,190	9	391	488	60	160	501	572	4,532
Indiana	6	4	....	1	791	1	59	60	....	.....	....	.....	.....
Kansas	34	25	1	6	29,272	2	249	211	28	90	235	204	2,048
Kentucky	7	2	....	5	8	....	41	37	....	.....	....	.....	.....
Louisiana	20	10	....	10	2,590	....	181	226	24	97	195	187	1,658
Michigan	19	8	....	11	890	....	102	195	19	50	112	211	1,093
Mississippi	4	3	....	1	2,670	....	21	23	....	.....	....	.....	.....
Missouri*	.....	....	....	....	.....	....	....	1	....	.....	....	.....	26
Montana	6	6	....	....	1,736	....	26	21	....	.....	....	.....	.....
Nebraska*	3	1	....	2	480	....	18	.....	1	6	9	.....	69
New Mexico	5	4	....	1	3,074	....	46	113	9	21	46	103	559
New York	14	8	....	....	56	6	81	151	....	.....	....	.....	.....
North Dakota	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Ohio	.....	....	....	....	.....	....	179	139	....	.....	....	.....	.....
Oklahoma	34	19	3	8	5,184	4	266	291	27	103	233	254	1,888
Pennsylvania	44	37	3	1	47	3	237	574	....	.....	....	.....	.....
South Dakota	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Tennessee	.....	....	....	....	.....	....	....	5	....	.....	....	.....	.....
Texas	173	135	6	31	71,382	1	1,118	1,413	225	671	1,018	1,509	11,170
Utah	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
West Virginia	.....	....	....	....	.....	....	93	104	....	.....	....	68†	603†
Wyoming	3	3	....	....	1,516	....	14	24	....	.....	....	.....	1
Total this week	459	317	13	103	141,545	26	3,291	4,265	411	1,267	2,484	3,270	24,902
Total last week	503	292	55	141	160,504	15	2,832	3,800	382	856	2,073	2,993	24,902
Total this year	3,291	2,090	297	787	1,045,103	117	....	.....	....	.....	....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
† For first 9 months of 1940 only. ‡ Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

United States Well Completions—*Continued*

ILLINOIS—Continued

White County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Crosby, Rebstock 2, nec sw 11-6s-9e	75	2283
Smokey, Wilson "B" 1, swc ne 11-6s-9e	225	2286
Exchange-Ohio, Pierce 14, nwc 12-6s-9e	172	2281
Mabee, Knight 1, swc se 10-7s-9e (PB 2266)	120	3063

OLD WELLS DEEPENED

Hamilton County—

Exchange, Friel "A" 4, ne ne se 34-5s-6e (OTD 2952)	455	3044

Marion County—

Russi, Brooks 8, sw ne sw 29-2n-2e (OTD 3438)	130	4618

Saline County—

Potter, Thaxton 1, c e½ nw sw 28-8s-7e (OTD 2217)	•	2955

Wabash County—

Tide Water, Steckler "A" 1, swc nw 26-1s-13w (OTD 2595)	35	2655
Continental, Dague 2, c e½ se ne nw 20-2s-13w (OTD 1785 (PB 2450)	7	2478

Washington County—

Murphy, Brammeier 1, sw nw ne 29-3s-4w (OTD 1030)	125	1044

White County—

Cherry et al, Calvin 3, sw ne ne 8-4s-14w (OTD 2700)	347	2829
Spellisy et al, Hon "E" 1, sw se sw 9-4s-14w (OTD 2845)	115	2861

SALT WATER DISPOSAL WELL

Clinton County—

Adams, Copple 29, ne nw ne sw 35-2n-1w	...	2143

Indiana

Gibson County—

Amis Jr., Cooper 1, nw nw ne nw 19-3s-13w	96	2094
Edwards, Maier 17 "C" A, se nw nw 13-3s-14w	235	2888
Continental, Bozeman 27, sec sw 23-3s-14w	270	2574
Mabee, New Harmony Bank 4, sw se nw 27-3s-14w	100	2881

Pulaski County—

McClure et al, Kocher 1, sw nw sw 23-30n-3w	•	1051

OLD WELL DEEPENED

Posey County—

Somers et al, Keck 7, se ne ne 34-3s-14w (OTD 2526)	90	2588

Kansas

Barton County—

Phillips, Frees 1, c n½ nw nw 35-16-11w	92	3401

Butler County—

Cities Service, Pierpont 86, nw ne se nw 33-25-5e	23	1957
Boyer 20, sw sw se 8-26-5e	31	1703
Becker, Weber 1, sw se nw 32-26-6e	•	2790
El Dorado, Young 1, c se nw 27-26-7e	36	2195
Cromwell & Lewis, Stern 8, sec ne 33-27-6e	35	3090

Cowley County—

Brewer, Winfield 4, sw nw sw 15-30-4e	85	2785
Phillips, Starkey 4, se ne se 16-30-4e	227	2785
Ryan, Whalen 1, swc ne 12-30-5e	•	3507
Brewer, David 4, sw ne ne 2-31-4e	50	2985
Hawkeye, Hittle 4, se nw ne 21-31-4e	2290	3356

Ellis County—

Lario, Marshall Ranch 11, c nw sw 31-11-17w	3000	3686
Shell, Riddler "A" 4, nwc 12-11-18w (PB 3431)	3000	3469
Hall, Oswald "B" 15, ne nw se 11-12-16w	1592	3105

Ellsworth County—

Continental et al, Rolfe 6, sw nw ne 28-17-8w	510	3234
Gulf, Mehl 3, c n½ se nw 18-17-9w	3000	3259

Greenwood County—

Harwood, Moss 13, se nw se nw 30-25-9e	14	2498
Bridgeport, Bedroja 2, se nw sw 5-26-10e	15	2168
Beeler, Holmes 1, nw sw ne 7-27-11e	•	1280
Ash, Taylor 1, nw ne nw 7-27-12e	•	1880

Jewell County—

Carter, Stratigraphic Test 1, nwc 5-5-10w	•	3982

McPherson County—

Continental, Johnson 4, c s½ se ne 31-20-5w	•	3400

Pawnee County—

Sanolind et al, Belt 3, c e½ nw sw 13-20-16w	2332	3867

Phillips County—

Cetal, Ray 3, ne se ne 32-5-20w	3000	3586

Pratt County—

Skelly, Morrison 1, c n½ 9-28-11w	¶0.96	4255

Rooks County—

Consumers Co-Operative, Beardmore 7, c n½ ne ne 10-9-16w	2576	3192

Russell County—

Texon, Hall 5, cwl nw ne se 26-14-13w	258	2921
Cities Service, Graham 4, c n½ se nw 28-14-13w	3200	3170
Gore, Michel 3, c w½ sw nw 36-14-14w	3000	3172
Cities Service, Eichman "A" 4, c e½ sw ne 12-15-14w	324	3331

Stafford County—

Derby et al, Roach 1, nwc se 12-22-14w	128	3787

Woodson County—

Aikman & Braden, Sasse 1, nw nw ne sw 36-23-13e	3	1761

OLD WELLS DEEPENED

Ellsworth County—

Magnolia, Andrea 5, swc 7-17-10w (OTD 3087)	277	3333

Russell County—

Darby, Dumler "C" 3, se sw ne 11-14-15w (OTD 3096)	174	3305

Kentucky

Daviess County—

Tuttle et al, Norris 1, ne sw nw se 20-O-32	•	490
Ashby et al, Dixon 2, nw ne se 1-Q-30	•	796
Creek Dr. Co., Morgan 9 sw se 13-N-29	•	1212

McLean County—

Ellis, Wright 1, se ne sw se 21-M-29	•	1642

Ohio County—

May, Renfrow 1, nw sw nw sw 23-N-35	5	331
Cumberland Pet. Co., Richards 40, se sw ne nw 1-N-34	3	425
Rex-Pyramid, Jolly 4, se sw ne sw 6-M-31	•	1130

North Louisiana

Bossier Parish (Bellevue)—

Roy L. Reese et al, Bellevue Land Co. 1, 27-20n-11w	•	3035

Caddo Parish (Pine Island)—

C. L. Oblinger, Atlanta-Shreveport O. & G. Co. 1, 2-20n-16w	•	996

Claiborne Parish (Lisbon)—

F. B. King, Fee 1, 3-20n-5w	•	5552

South Louisiana

Ascension Parish (Sorrento)—

Williams & King, United Lands 1	•	9680

Cameron Parish (Chalkley)—

Humble, Hanszen 10	147	8760

Evangeline Parish (Ville Platte)—

Continental, Haas 7	110	10,207
Lilly, Foret 1	†	9485

Jefferson Davis Parish (South China)—

Union Sulphur, Latrielle 1	•	9965

Jefferson Davis Parish (Iowa)—

Stanolind, Willett 1	478	8303

Jefferson Davis Parish (Woodlawn)—

Union Sulphur, Trimble 2	256	9650

LaFourche Parish (Golden Meadows)—

Brown-Woods, Cheramie 2	206	5205
Texas, State 11	•	3173

LaFourche Parish (Raceland)—

Amerada, South Coast 7	†	10,644

Plaquemines Parish (Potash)—

Humble, OLB 48	164	8559

St Martin Parish (Lake Mongoulois)—

Texas, State 9	†	9715

St. Martin Parish (West Lake Verrett)—

Shell, Breaux Lumber 1	197	9850
Salt Dome Royalties 2	•	3515

Terrebonne Parish (Dog Lake)—

Texas, LL&E 14	335	7752

Vermilion Parish (East White Lake)—

Union of California, La. Ld. & Fur Co 1	217	9025
School Board 1-B	480	11,000

Montana

Glacier County (Cut Bank)—

Texas Co., Aronson 2, c nw sw 21-35n-6w	592	2990
Glacier Prod. Co., Winclair 2, c ne se 28-33n-5w	110	2954
Cons. Gas Co., Frary-Tribal 1, nw se 19-32n-5w	569	2837
A. P. Cons. Oil Co., Keisel 5, s½ s½ 11-34n-6w	289	2895
Glacier Prod. Co. O'Brien 4, s sw 32-34n-5w	50	2743
A. B. Cobb & Co., Farmers State Bank, se ne 17-35n-5w	96	2920

Michigan

Allegan County—

Clapsaddle & Harris, Wall 1, nw ne se 31-1n-14w	•	1290
Guy Wray, Symmons 1, nw sw ne 33-2n-16w	•	1238
Lang & Lewis, Inc., Atwater 1, ne se sw 14-3n-12w	•	1667
Sohio Prod. Co., Kuipers 1, ne nw ne 14-4n-14w	•	1592
Socony Vacuum, Weber 2, sw ne nw 14-4n-13w	75	1575
Michigan Devonian, Smith 3, se se nw 15-4n-13w	30	1899
Spencer Cook, Morgan 2, sw sw ne 29-1n-13w	25	1378
Watson Oil Co., Miner 1, ne ne ne 20-2n-12w	•	1588

Arenac County—

Pure Oil, McTaggart A-1, nw nw se 22-19n-3e	300	2873

Bay County—

United Driller, Kircher 1, sw ne ne 3-14n-4e	55	2885

Gratiot County—

Vic R. Wilson, Douglas 1, ne se se 33-11n-2w	•	900

Huron County—

Wallace Markle, Johnston 1, se se sw 8-17n-14e	•	3422
Cryden Pet. Co., McIntyre 1, sw sw sw 16-17n-14e	•	2762

Midland County—

Pure Oil, Naramore 38, c n ne se 16-13n-1w	45	3401

Muskegon County—

R. C. Lentz, Cihak 1, sw se nw 32-11n-15w	•	1902

Ottawa County—

Grimes & Son, Kullkamp 1, se se ne 9-7n-14w	•	1801
Sprenger Bros., Brokema 1, nw nw se 14-7n-13w	10	1909
John Newell, Bronkema 1, nw ne nw 23-7n-13w	350	1879

Van Buren County—

Jetter Dr. Co., Hence 4, ne sw nw 14-1s-14w	•	1325

Mississippi

Montgomery County (Wildcat)—

Henderson Oil Co., Columbian Mutual Life Ins. Co. 1, 36-21n-5e	•	4458

Yazoo County (Tinsley Dome)—

Hassie Hunt, Stutts 1, 30-10n-2w	960	5014
Love Pet. Co., Stutts 1, 30-10n-2w	1200	5005
Union Prod. Co., Harris 5, 25-10n-3w	510	5070

New Mexico

Eddy County (Wildcat)—

A. & M. Pet. Co., State 2, nwc se 15-21s-27e	•	584

Eddy County—

Jones-Yates & Nix, Crozier 1, se ne nw 26-18s-26e	5	1150

Lea County (Arrowhead)—

Gulf Oil, State-Ramsey 8, c nw se 35-21s-36e	404	3870

Lea County (Eaves)—

Continental Oil et al, Eaves 1-B-19, swc ne 19-26s-37e	2640	3126

Lea County (Maljamar)—

Green Bay Oil Co., Mitchell 3-A, c ne ne 7-17s-32e	25	3970

New York

Allegany County—

Walter McEnroe, Hoover farm, Bolivar	6	1539
D. V. McCarthy, Wilson farm, Bolivar	5	1336
Messer Oil Corp., Shaner farm, Bolivar	8	1439
Crowley Bros., Crowley farm, Bolivar	10	1420
Marsh Oil Co., Withey farm, Bolivar	6	1389
Sloan & Zook, McDermitt farm, Bolivar	5	1410
Karl-Weller Oil Corp., Swarthout farm, Wirt	6	1423
Forest Oil Co., Ackerman farm, Wirt	10	1432

WATER INTAKE WELLS

Allegany County—

Shamrock Oil Co., Durham farm, Bolivar	...	1426
South Bolivar Oil Co., McKelvey farm, Bolivar	...	1360
New York Oil Co., Brown farm, Bolivar	...	1459
Bradley Prod. Corp., Duke farm, Alma	...	1423
Roy E. Vossler, Chester McEnroe farm, Alma	...	1266
Ed. McLaughlin, Briggs farm, Willing	...	1040

United States Well Completions—*Continued*

Nebraska

Company, Well and Location	Init. Prod. Bbls.	Depth
Cass County—		
Golden Rod Oil Co., Sporrer 1, se sec 8-11n-13e	*	1356
Nemaha County—		
Engles et al, Wheeler 1, nec 9-4n-14e	*	2745
Richardson County—		
Campbell, Schock 2, sw se sw 20-1n-16e	480	2282

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Carter County—		
Batson, Dillard 1 nw se nw se 10-4s-2w	*	2505
Franklin 1, nw sw nw se 10-4s-2w	91	2018
Carter, Walker-Voorhees 8, se se nw sw 21-4s-2w (pb 2304)	58	2393
Walker-Voorhees 9, se sw nw sw 21-4s-2w	228	2307
O'Connor et al, Horton 1, nw nw se sw 21-4s-2w (pb 2423)	63	2790
Comanche County—		
Wichita Oils, Inc., Ashcraft 9, sw swc 28-2n-10w	*	1064
Creek County—		
Berry, Linihan 1, se ne ne 31-15n-7e	353	4120
Steckoll, Barnsdall 1-A, sw ne sw 13-16n-9e	*	3282
Briggs, Jones 1, nec nw 29-16-10e	16	2892
Jackson, Hope 2, ne nw sw 3-17n-9e	25	2061
Indo, Coch 1-A, nw sw ne 18-17n-11e	25	2852
Jackson County—		
Altus Pet. Corp., Maud 4, se nw ne 15-1n-20w	76	1595
Burke, Minor 7, nw se ne 15-1n-20w	20	1524
Latimer County—		
LeFlore G.&E Co., McFerren RO-39, ne sw sw 2-6n-22e (pb 1692)	¶2.9	1704
Lincoln County—		
Kerlyn, Froug 1, se nw nw 2-13n-6e	75	4243
Underwood et al, Thomas 1, c nw sw 10-13n-6e	¶12.0	4292
Muskogee County—		
Wagester, Smith 1, se se nw se 15-14n-19e	*	960
Marshall County—		
Pure, Little (201) 2, sw se se 28-5s-7e	1446	5071
Okfuskee County—		
Sunray, Replogle 2, se sw se 35-11n-8e	277	3485
Phillips, James 1, sec sw 2-11n-10e (pb 3195)	23	3241
Shell, Ramsey 1, sw nw nw 35-12n-8e	1574	3656
Pontotoc County—		
Dixon et al, Duncan 1, nwc ne 33-5n-5e	5	2533
Pottawatomie County—		
Oils, Inc., Walker 1, nec sw 9-5n-5e	200	2701
Sokla Corp., Kelly 1, se sw nw 31-11n-4e	*	90
Seminole County—		
Stanolind, Baird 1, nw se sw nw 15-9n-6e	44	2912
Dunnett, Duncan 1, sw nw ne 33-9n-6e	120	2542
Stephens County—		
C. Carter, Parker 3, nw se ne ne 17-1s-5w	¶5.0	748
Tillman County—		
I. T. I. O., Wilkins 1, nec se 2-3s-19w	*	5315
Tulsa County—		
B. Swift, Bell 1, sec nw 14-19n-10e	*	1949
Wagoner County—		
K. L. G., Robson 10, swc nw 22-19n-15e	*	1525
OLD WELLS DEEPENED		
Carter County—		
Brown, Harmon 1 ne ne se sw 21-1s-2w (OTD 200)	*	302
Cleveland County—		
Anderson-Prichard, State 3, sw nw se 16-10n-2w (OTD 7285)	20	7298
Oklahoma County—		
Sunray, State 5, nw ne nw 27-12n-3w (OTD 6507)	325	6526
Pontotoc County—		
Superior, Mauldin 7, ne sw nw 32-5n-5e (OTD 2536)	20	2576

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
BRADFORD DISTRICT		
N. V. V. Franchot, Campbell	2	....
Franchot & Meridan	7	....
E. H. Culbertson, Wright	2	....
Pine Run Oil Co., Bing 130-1-2-3-4-6	3	....
Bradford Tr. Co., 20 wells	20	....
Forest Oil Corp., 2 wells	2	....
Forest Pet. Corp.	1	....
Niagara Oil Corp., 6 wells	6	....
NEW YORK-PENN GAS FIELD		
G. L. Cabot, Orwin & Carlson	¶	....
Higgins et al, Roy Phipps	*	....
MIDDLE DISTRICT		
M. E. Bolles, Bolles	1	....
Oil City Tr. Co., Thompson	1	....
Alum Rock Gas Co., Griswold	¶	....
G. L. Rhodes et al, Fee	1	....
BUTLER-ARMSTRONG DISTRICT		
W. H. Larkin, Jr., Larkin, Ritzert et al	½	....
Dewey Trust Co., Dewey	¶	....
WATER INTAKE WELLS		
Bradford District—		
Messer Oil Corp., Loop	..	....
Andrew & McDowell, 218-296 Bing.	..	....
Forest Pet. Corp.	..	....

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
P. G. Lake, Inc., Dickerson 11 (55-ac)	124	3582
Shell, Brooks 26-A (174.69-ac)	1200	3751
Kilgore Area—		
Amerada, Lacy 13 (83.6-ac)	4000	3703
Delta Dr. Co., Alexander 5 (3¾-ac)	250	3549
Nioco Oil Co., Knowles 15 (7.16-ac)	600	3580
Potter Bros. Prod. Co., Griffin 4-A (1.17-ac)	1500	3580
Griffin 8-A (1.17-ac)	1500	3580
J. B. Wrather et al, Jerry 3, blk 118	1200	3590
Longview Area—		
O. C. Bailey & Trimble, Jones 16 (15-ac)	3000	3685
Magnolia, Richey 13 (45-ac)	2200	3618
J. H. Massie et al, Orr 9 (36-ac)	4500	3587
Anderson County (Long Lake)—		
Alex McCutchin et al, Reagan 1	222	5334
Franklin County (Talco)—		
Magnolia, Easterling 1	440	4302
Limestone County (Wildcat)—		
Gulf & Farrell Dr. Co., Bevill 1	*	5520
Wood County (Hawkins)—		
W. L. Goldston et al, Osborne-Sun 2	*	4865
C. W. Johnson-Hollandsworth Dr. Co., Lynch 1	266	4871

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Clayton-Dwyer Dr. Co., Schafer-Texaco 5	50	3126
Mid-Union Dr. Co., Block 1	20	3155
Gray County—		
Magnolia, Fee (Tr. 227) 42	199	2981
Stanolind-Magnolia, Saunders 9	95	3095
Hutchinson County—		
J. H. Huber Corp., Weatherly 11-A	1832	3010
Shell, Harvey Sisters 12-B	352	3075
Wheeler County—		
T. G. Williams et al, Bentley 5	35	2410

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Griffin-Kadane)—		
Jack E. Kadane, Tr., Griffin 2-A	1512	4353
Archer County (Hull-Silk)—		
Bert Ligon-Deep Oil Dev. Co., Moss 8-A	636	4350
Archer County—		
W. B. Douglas et al, Meade 1	*	1220
Roy H. King et al, Stinnett 1	7	715
Rathke Oil Co., Horry 2	5	1439
John L. Webb et al, Montgomery 1	27	1108
Baylor County (Wildcat)—		
L. T. Burns et al, Fee 1	*	4775
Clay County (Wildcat)—		
Claude E. Riley et al, Reid 1	*	1511
Clay County—		
Bell O&G Co., Ramsey 2	10	1115
Duncan-Arnhold & Duncan, Duncan 19	112	1224
Cooke County (Walnut Bend)—		
Sun Oil, Snuggs 10 (pb 4055)	425	4921
Cooke County—		
V. E. Powell et al, Rosson 1	48	1112
Whitfield-Pearson & Grimes, Sicking 7	318	1256
Denton County (Wildcat)—		
Amon G. Carter et al, Allen 1	*	9025
Jack County (Wildcat)—		
Rathke Oil Co.-R. C. Parker, Mosely 1 (pb 4510)	¶2.25	5347
Jack County—		
O. J. Perrin et al, Rhodes 7	768	3155
Montague County—		
Claymont Oil Co., Bouldin-Crow 6	10	824
Geo. Golden et al, J. W. Maddox 1	*	885
J. M. Hawley et al, Bouldin-Crow 3	35	812
Wichita County (K-M-A-Ellenburger)—		
Fain-McGaha Oil Corp., Griffin 2-B-E	1189	4322
Wichita County (Wildcat)—		
Big Six Oil Co., Edmondson 1	*	1820
Wichita County—		
W. E. Prod. Co., Glass 2	65	1328
Wilbarger County (Wildcat)—		
C. H. Kadane & J. N. Fidel (was Big Six Oil Co.), Morris 1	140	2905
Wilbarger County—		
W. B. Omohundro et al, Waggoner Est. 1-B	30	1247
Luther Webb et al, Waggoner Est.-Bird 4	†	3350
Young County (Wildcats)—		
Rhea Anderson et al, Mulinax 1	*	1001
Brazelton Bros., Ferguson 1	*	455
B. C. Gilmore et al, Bagley 1-C	*	580
M. R. Stipe et al, Bloodworth 1	*	1156

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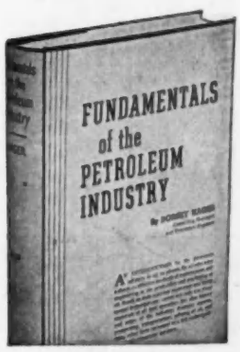

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United States Well Completions—*Continued*

NORTH TEXAS—Continued

Young County—

Company, Well and Location	Init. Prod. Bbls.	Depth
L. T. Burns et al, Bloodworth 3	135	885
Bloodworth 5	125	885
Christie Bros., Street 5	20	3410
B. C. Gilmore et al, Stewart 6	*	593
Graham Roy. Co., Keen 1	2	904
Pet. Producers Co., Rogers 2-A	26	901
Travis Oil Co., Ford 4	640	4109

West Texas

Cochran County (Duggan-Slaughter)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Atlantic Ref. Co., Boyd-Humble 4	675	5053
Mid-Continent Pet. Corp., Mallet 1-A	649	5050

Crane County (Gulf-McElroy)—

Gulf, McElroy 237	1331	2965

Ector County (Foster)—

Continental Oil, Johnson 3-B	779	4308
Geo. P. Livermore, Johnson 1-35	1192	4139

Ector County (North Cowden)—

M. J. Delaney et al, Smith 1-C	593	4413
Carl B. King Dr. Co., Holt-Landreth 1-B	799	4361
Stanolind, Midland 6-B	120	4610

Gaines County (Seminole)—

Amerada, Turlin 5	612	5330
H. W. Bass et al, Austin-Standard 4	443	5220
Humble, Champion 2	536	5306
Magnolia-Atlantic, H. & J. 8-195	324	5237
Ohio Oil, Gibbs 6	725	5330

Hockley County (Duggan-Slaughter)—

Bond Oil Corp. - Awoeb Oil Co., Barry 3	991	5015
Devonian Oil Co., Citizens Bank (Lubbock) 2	1154	5009
Magnolia, Mallett L&C Co. 5-G	1031	5014
Slaughter 1	1006	4958
Sid Richardson et al, Slaughter 10	1154	4985
Denton-Sun 3	607	4985

Mitchell County (Northwest)—

K. A. Ehman - Elizey & Daniel, Crawford 1	320	1756
Strain 1	424	1800
Gibson Oil Corp., Mills 1	75	1681

Pecos County (Wildcat)—

S. D. Pattillo et al, Hoffman 1	*	1390

Pecos County (White-Baker)—

Cardinal Oil Co., White-Baker 4-E	76	1749

Scurry County (Northwest)—

D. M. Buffington-C. R. Smith, Chapman 3-A	15	1770

Scurry County (Sharon)—

D. & R. Oil Co., Burney 8	108	2471
Magnolia, Sterling 4	176	2450
F. W. Merrick et al, Dozier 1	*	2648

Upton County (Gulf-McElroy)—

Gulf, McElroy 233	380	2860

Upton County (McCamey)—

Trebol Oil Co., Rogers-Shell 1	243	2680

Ward County—

Edwards-Moore-Donnelly, Reynolds 5	119	2027
Gulf, O'Brien 161	356	2773

Winkler County (Keystone)—

Sid Richardson et al, Keystone-Sun 3	189	3410
Sam Weiner et al, Jenkins-Conoco 5	209	3435

Yoakum County (Wasson)—

Aloco Oil Co., Miller-Texaco 10-B	1136	5210
Don Danvers et al, Willard 12	960	5270
Oil Dev. Co., Willard 13-763	1026	5280
Shell Oil, Corder 3	386	5045

OLD WELLS DEEPENED

Ward County—

Standard of Texas, Durgin 3 (otd 2539)	*	3640

South Texas

CORPUS CHRISTI DISTRICT

Jackson County (Lolita)—

Humble, L. Ranch Co. 14-A	750	5931

Jackson County (West Ranch)—

W. Stewart Boyle, L. Ranch Co. 2	1250	5634
Forest Dev. Corp., Dixon 1	525	5770
Magnolia, Bennett-Fee 7	1300	5771
West 129-A	1000	5132
Midstates Oil Corp., Bennview Dev. Co. 2	500	5755

Jim Wells County (Wade City)—

Rodney Delange & W. Earl Rowe, McNeill 6	450	4923
Rodney Delange, McNeill 17	375	4940

Live Oak County (White Creek)—

Alvin Brauer, W. G. Gayle et al 4	99	1571

Live Oak County (Wildcat)—

Brauer, Beacham & West, Atkinson 1, 80-ac lse, Louis Ayers sur, 2½ mi ne Calliham fld	*	913

Nueces County (Agua Dulce)—

C. Pete Burton, Mounger 1	750	6466
H. H. Howell, Schulze 2	650	6555
Texon Royalty Co., Driscoll 5	500	6921

Nueces County (Bentonville-King)—

Southern Minerals Corp., Richard King 18	350	5608
Walker	350	5650

Nueces County (Clara Driscoll)—

E. A. Graham, Gandy 1	500	6010

Nueces County (E. White Point)—

W. R. R. Oil Co., State-Nueces Bay 6 (973)	500	5860

Nueces County (Stratton)—

Bay-Tex, Union Central 8	550	6812
Union Central 12	550	6805
Southern Minerals, Sellers 6	450	6632

Victoria County (Coletto Creek)—

Averill & Cox, Terrell 1	200	2848

Victoria County (Heyser)—

Gulf, Traylor 51-B	500	5492

Victoria County (Victoria)—

W. Stewart Boyle, Meyer 2	125	3058

OLD WELLS DEEPENED

Nueces County (Agua Dulce)—

Lockhart, Purl 1-B (otd 4848)	¶200 & 200	5103

Nueces County (Luby)—

Seaboard, Luby 9, (otd 5068) new sand	500	7311

LAREDO DISTRICT

Duval County (Cedro Hill)—

Humble, Duval Co. Rch. Co. 3-G	18	1474

Duval County (Cole)—

H. W. Brewer, W. H. Harper et al 2	30	1775

Duval County (Hoffman)—

Gilcrease, Bruno Salazar (sec 3)	250	2634

McMullen County (S. Callihan)—

Morris Dr. Co., Miear 6	*	1625

Starr County (Boyle)—

Fidelity Oil & Roy. Co., Standard Trust Co. 3-D	*	3538

Starr County (Rincon)—

Continental, Slick 19-A	500	4225

Starr County (Samfordyce) (Sullivan City)—

Royal O. & G. Corp., Flores 2	350	3470

Webb County (Glen)—

Transwestern, Yaeger-Strohman 5	125	2177
Yaeger-Strohman 6	150	2170

SAN ANTONIO DISTRICT

Atascosa County (Wildcat)—

Henderson Coquat, Beshears 1, 60-ac tr, J. S. Loving sur 194, 6 mi n Campbellton	*	5820

Bastrop County (Wildcats)—

Marts & Beaven, Inc., Dougherty 1, 77½-ac tr, Geo. Glasscock sur, 4 mi e Elgin	*	3310
Mossert & Dixon, O. B. Lentz 1, 300-ac tr, J. Lentz sur, 3 mi n Bastrop	*	2327

Bexar County (Gas Ridge)—

Southwest Dr. Co., Covell et al 8	3½	425
Covell et al 10	3½	425

Caldwell County (Tinney Creek)—

F. W. Wiegand, DeVaughn 2	500	2700

Guadalupe County (Elm Creek)—

Walter L. Marshall et al, Thomas 1	4½	806
Jack E. West, Lenz 3	5	802

Travis County (Kimbro)—

M. J. Grimes, Pearson 4	5	692

Texas Gulf Coast

Brazoria County (Old Ocean)—

Stanolind, Wallis Lumber Co 1	319	10,810

Brazoria County (Rowan)—

Humble, Hubbard 3	¶	9600

Brazoria County (Wildcat)—

J. Newton Rayzor, Christian 1, Chenango	453	9500

Chambers County (Anahuac)—

Humble, Middleton 56	735	7224

Chambers County (Barbers Hill)—

Texas Gulf Pro., Kirby 32-B	298	5100

Galveston County (Caplen)—

Sun, State 1-27	357	7800

Galveston County (Dickinson)—

Pan-American, White 1	¶	8431
Pure, Mac Stewart 8	426	8419

Galveston County (League City)—

Phillips, Lobit 9	234	9350

Grimes County (Wildcat)—

Irwin & Muench, Schoenfeld 1	*	8200

Harris County (Dyersdale)—

Tilson Construction, Haas & Thompson 1	92	4100

Harris County (Tomball)—

Humble, Theck 4	108	5580

Jefferson County (Fannett)—

Gulf, Bordages 11-A	755	8377

Jefferson County (South China)—

Pan American, So. China Community 1	167	7918

Matagorda County (Blessing)—

Texas, Hammond 1	¶	8345

Orange County (Port Neches)—

Texas, Stark 4	*	6200

Polk County (Segno)—

Humble, Kirby 33-B	408	8196

San Jacinto County (Wildcat)—

McDannald, U.S.A.-Foster 1, Cold Spring	*	8000

Wharton County (Magnet)—

Pan American, Halamicek 2-B	70	5543

West Central Texas

Brown County (Wildcat)—

Johnson-Richburg & Mannon, Charter 2	*	404

Brown County—

J. E. Whitesides et al, Buckners Orphanage 1	¶2.9	1508

Eastland County (Wildcat)—

W. M. Morris et al, Bryant 1	*	925

Eastland County—

C. L. Mahaney et al, Jackson 2	855	2637
L. Teatsorth et al, Dick 1	15	1512

Jones County—

Geo. Callihan et al, Higgs 3	36	2150
Fain-McGaha Oil Corp., Akard 1	380	2137

Jones County (Wildcat)—

Shaheen Oil Co., Young 1	†	1650

Shackelford County—

L. P. Blosser et al, Simpson 1	*	963
Roeser-Pendleton, Newell 9-B	15	1195
A. C. Walker et al, Clark 1	*	645

Stephens County—

J. R. Tolbert et al, Norton 9-K	*	4488

Wyoming

Carbon County (Mahoney)—

Sinclair-Wyoming Oil Co., Mahoney 2-A, csw ne 34-26n-88w	596	4520

Carbon County (Wertz)—

Sinclair-Wyoming Oil Co., Wertz 16-A, sw sw sw 6-26n-89w	900	6227

Niobrara County (Lance Creek)—

Continental Oil, Bell 23, cse nw sw 34-36n-65w	20	5486

*Failures; †Junked; ¶Million cu. ft. gas.

Special Rules for Frio Sand Wells in Saxet Field

The Texas Railroad Commission has entered an order for wells producing from the Frio sand in the Saxet field, giving an allowable premium to wells which produce more than 80 percent of water.

A well producing 81 percent water would be granted an additional barrel daily, while wells producing 99 percent water, receive a 380-barrel premium.

The following formula applies:

$$\text{Water allowable} = \frac{\%\ \text{water} - 80}{100 - \%\ \text{water}} \times 20$$

The commission, however, has limited to 10,000/1 the gas/oil allowance for these wells. This provision may serve to prevent an operator from pulling any well too hard, and may curtail production form some wells, which are said to be operating with ratios as high as 90,000/1.

Want Allowable Increase

Comanche Pipe Line Company has requested an increase in the allowable for the Shearer pool, Pecos County. At a hearing before the Texas Railroad Commission last week, the company requested that the allowable be raised from 763 to 1500 barrels daily. It would be distributed among 43 wells.

The allowable now averages 18 barrels daily per well, while the company has continuously nominated to purchase 1500 barrels.

Conoco-Driscoll Hearing Indefinitely Postponed

At the request of Continental Oil Company, the Texas Railroad Commission has postponed indefinitely a hearing set for February 4 to fix operating rules for the Conoco-Driscoll field, Duval County.

WILDCAT REPORT
New Starts and Completions

ARKANSAS
COMPLETION

Nevada County—Coker & Grieves' Thompson 1, se ne 33-10-22, abnd 1207 ft.

CALIFORNIA
FIRST REPORTS

Contra Costa County—Lafayette Oil Co.'s Morris 1, sec 28-1-2, lcn, Lafayette area.

Kern County—Continental's Reserve 1, sec 28-11-19, lcn, Grapevine area. Bolling Oil Co.'s Quinn 2, sec 14-25-27, lcn Richgrove area.

Kings County—Tide Water's West Slope 76, sec 20-24-18, lcn, Pyramid Hills area.

Los Angeles County—Barnsdall's Wayside, sec 5-4-16, lcn, Castaic area. Thos. H. T. Purman's Needham 1, sec 13-3-16, lcn, Newhall area. De Marsh Oil Co.'s Phillips 1, nw Frigate and Mauretania sts, lcn, Torrance-Wilmington area.

Sacramento County—Tracy Harkness's No. 1, sec 35-8-4, rig, Sacramento area.

COMPLETIONS

Kern County—Crestmont Oil Co.'s Russell 1, sec 6-28-29, td 1845 ft, plug 1680 ft, fresh water to 850 ft, no oil or gas, barren Vedder 1480 ft, from 1580 to 1680 ft cored marine oil sand finger in Walker, abnd, Round Mountain area.

Los Angeles County—Western Gulf Oil Co.'s Lechler 1, sec 31-5-17, td 2442 ft, plug 2415 ft, cored oil sand 2358-78 ft below which was shale with streaks of oil sand to 2435 ft, 100 bbls 22.8-gr, 22 percent cut, new fld.

Santa Barbara County—Texas Co.'s Bishop A-2, sec 13-4-29, td 3025 ft in gray sand, barren Vaqueros 2920 ft, abnd, Elwood-Coal Oil Point area.

Ventura County—Texas Co.'s Montgomery 1, sec 13-2-22, td 7387 ft, formation test 7312-87 ft open 1 hr, strong steady blow, 268 ft heavy tar and mud, abnd, Oxnard area. Robert Cannell's Robertson Corehole 1, sec 17-2-18, td 1200 ft, no casing, bottomed in sand and shale, abnd, Simi area.

COLORADO
FIRST REPORT

Moffatt County—C. R. Privett et al's Strelling 1, ne se se 12-5n-96w, Dry Lakes structure, loc.

KANSAS
FIRST REPORTS

Kearny County—Stanolind's Billinger 1, c e½ se sw 5-21-38w, lcn.

Pratt County—Stanolind's Hartsell 1, c e½ nw ne 3-26-12w, rur.

Smith County—Blair et al's Koch 1, sec 21-2-11w, rur.

Woodson County—Hughes et al's McVay 1, sw ne ne 34-26-13e, dr.

COMPLETIONS

Barton County—Piggott & Johnson et al's Beran 1, c e½ ne ne 24-17-12w, 2½ mi se Wondra pool, Ft. Riley 1660 ft, Lansing 3045, at 3116-22 ft, swab 10 bbls oil 14 bbls water 8 hrs, so 3210-20 ft, Sooy 3310 ft, Arbuckle 3335 ft, water, abnd 3367 ft..

SOUTH LOUISIANA
COMPLETIONS

Plaquemines Parish — Humble's Orleans Levee Board 48, sec 13-18s-15e, new sd Potash field, flwg 164 bbl 28-gr oil via ⅛-in ch from 8550-85 ft, tbg/csg pressure 1300/0.

Terrebonne Parish—Louisiana Land & Explor. Co.'s State-Point Au Fer 1, Point Au Fer Island, sec 3-21s-11e, abn lcn.

Vermilion Parish—Union Oil Co. of Calif. School Board 1-B, sec 16-15s-1e, new sd East White Point fld, flwg 480 bbls 37.4-gr oil dly via 3/16-in top and ¼-in bottom ch from 9863-74 and 9884-90 ft, tbg press 1500 lbs. Union Oil Co. of Calif.'s Louisiana Land & Fur Co. 4, flwd 217 bbl 34-6-gr oil dly via 5/32-in ch from 7342-55 ft, tbg/csg press 1400/2400 lbs, new sand East White Point fld, sec 15-15s-1e.

MICHIGAN
FIRST REPORTS

Alcona County—A. F. Pabst's Sayres 1, se nw sw 20-28n-9e, rig.

Kent County—F. W. Haskin's Nyenhuis 1, se se sw 6-5n-12w, dr. C. A. Perry's Wolf 1, se ne se 33-5n-12w, dr.

Allegan County—Clapsaddle & Harris' Wall 1, nw ne se 31-1n-14w, Traverse lime 1223 ft, abnd 1290 ft. Guy Wray's Symmons 1, nw sw ne 33-2n-16w, Traverse 1216 ft, abnd 1238 ft. Lang & Lewis, Inc.'s Atwater 1, ne se sw 14-3n-12w, Traverse 1639 ft, abnd 1667 ft. Watson Oil Co.'s Miner 1, ne ne ne 20-2n-12w, Traverse 1575 ft, abnd 1588 ft. C. W. Cook's Larson 1, se ne ne 26-3n-14w, lcn.

Huron County—Wallace Markle's Johnston 1, se se sw 8-17n-14e, Dundee 2120 ft, Monroe 2483 ft, so 2644 ft, abnd 3422 ft. Cryden Pet. Co.'s McIntyre 1, sw sw sw 16-17n-14e, Dundee 2093 ft, Monroe 2445 ft, so 2603 ft, abnd 2742 ft. Great Western Pet. Corp.'s Hartsell 1, ne sw sw 23-15n-11e, rig.

Muskegon County—R. C. Lentz's Cihak 1, sw se nw 32-11n-15w, Traverse 1852 ft, abnd 1902 ft.

Ottawa County—Grimes & Son's Kulikamp 1, se se ne 9-7n-14w, Traverse 1729 ft, abnd 1801 ft.

MISSISSIPPI
COMPLETION

Montgomery County—Henderson Oil Co.'s Columbian Mut. Life Ins. 1, sec nw se 36-21n-5e, elev 268 ft, abnd 4458 ft, shale, streaks lime.

NEBRASKA
FIRST REPORTS

Cass County—Golden Rod Oil Co.'s Fleming 1, c n½ ne nw 20-11n-13e, lcn.

Furnas County—Barnsdall et al's Erickson 1, swc 8-1n-23w, dr.

COMPLETIONS

Cass County—Golden Rod Oil Co.'s Sporrer 1, sec 8-11n-13e, 7 mi sw Plattsmouth, Mississippi 400 ft, Viola 1020 ft, St. Peter (Wilcox) 1329 ft, Granite 1354 ft, abnd 1356 ft.

Nemaha County—Engles et al's Wheeler 1, nec 9-4n-14e, 4 mi s Auburn, Lansing 1035 ft, sd 2130-70 ft, so & water, Hunton 2658 ft, abnd 2745 ft.

NEW MEXICO
FIRST REPORTS

Chaves County—Frank Montgomery et al's Purcell 1-B, c w½ sw nw 13-11s-26e, cem 10-in pipe 210 ft.

Hidalgo County—Harry W. Long et al's Anderson 1, near c n½ 16-22s-20w, lcn.

COMPLETION

Eddy County—A. & M. Pet. Co.'s State 2, nwc se 15-21s-27e, elev 3291 ft, abnd 584 ft.

OKLAHOMA
FIRST REPORTS

Okfuskee County—K. G. F. F. Oil Co.'s Camp 1, swc 6-11n-9e- lcn.

Oklahoma County—Clyde Dorr et al's Riley 1, nec se 34-13n-1e, rur.

Osage County—Superior Oil Co.'s Osage 1, nw se sw 23-22n-8e, dr.

Pawnee County—Malernee et al's Lucas 1-A, nw se nw 28-21n-8e, dr.

COMPLETIONS

Creek County—Kirchner et al's Carson 1, ne se nw 23-17n-9e, 2 mi e Walker pool, so 1990-97 ft, sd 2060-78 ft, Brown lime 2233-50 ft, sd 2387-2425 ft, so 2387-92 ft, sd 2438-63 ft, sw, Mississippi 2806 ft, base Mississippi 3155 ft, Wilcox 3199 ft, hfw, abnd 3225 ft.

Logan County—Big Chief Dr. Co. et al's Strange 1, c sw se 27-18n-4w, 1¼ mi e Lovell pool, new pool, Oread 3640 ft, Tonkawa lime 3820 ft Tonkawa sd 3852 ft, Lovell lime 4040 ft, Lovell sd 4085 ft, Avant 4266 ft, missed Layton sd, td 5127 ft, perf Avant, hfw, 7-inch 4518 ft, perf Elgin sd 3151-56 ft, 8,500,000 feet gas.

Tulsa County—W. F. Eppler et al's McBirney 1-A, c sw sw 12-18n-13e, Jenks area, Oswego li 510-20 ft, sd 1098-1120 ft, abnd 1392 ft.

Woods County—Gulf's Hess 1, c ne nw 33-23n-13w, 7 mi se Galena, Lower Layton 5740 ft, Checkerboard 5885 ft, Oswego 6150 ft, Chester 6570 ft, asphalt 6991-97 ft, asphalt stains to 7090 ft, Kinderhook 7540 ft, Woodford 7720, Hunton 7726 ft, Sylvan 7030 ft, Viola 8040 ft, Simpson 8055 ft, hard white sand, abnd 8367 ft.

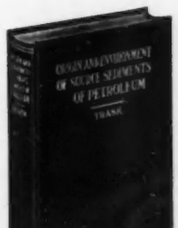
SOUTH TEXAS
FIRST REPORTS

Bastrop County—Marts & Beaven, Inc.'s Walker 1, 29-ac lse, Geo. Glasscock sur, 4 mi e Elgin, preparing to sp for 3300-ft test.

Duval County—J. L. Collins & Co.'s Hrs. of Chas. Adami 2, J. H. Gibson sur 349, 208-ac lse, 2¼ mi se Adami fld, lcn. H. J. Hoffman 1, BS&F sur 121, 1 mi s Tarancalina fld, Shell farmout, lcn.

Hidalgo County—Mina Krauss, Tr.'s 1st Nat.

A BOOK



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Bk of Brownsville 1, blk 34, porc 46, 4 mi ne Samfordyce fld, E. J. Liberty, contractor, sp.

Live Oak County—J. H. Durbin et al's Davidson 1, 432.4-ac lse, Juan Houlihan sur 5, ab 17, Whitsett townsite, elev 248 ft, 2300-ft test.

Nueces County—Ginther, Warren & Ginther's Eggert 1, sec 83, Geo. H. Paul's subd, Robt. Driscoll Rnch, on 412.9-ac lse, 7200-ft test, lcn. Texas Conservative's Huie 2, se¼ sec 127, Geo. H. Paul's subd, Robt. Driscoll rnch, 1 mi se Clara Driscoll fld, ru.

San Patricio County—S. E. W. Oil Corp.'s Morris 1, sec 71, Coleman-Fulton Pasture Co. Lands, 160-ac lse, 2½ mi se Taft, ru for 7000-ft test.

Starr County—Zimmerman & Lynn's Garcia 1, 160-ac lse, 1250 ft s Dean & Hendrickson's Garcia 1, ru.

Travis County—J. C. Tittle's Green 1, 80-ac lse, H. Martin sur 65, 2 mi nw Elgin, dr 515 ft.

Victoria County—W. Stewart Boyle's Fox 1, n 40 ac of blks D&E on w side of Guadalupe River in Victoria 4 lge gr, on 179.88-ac lse, 3 mi sw Victoria, lcn.

Webb County—Adams & Lefevre's Billings, Jr. et al 1, ne¼ of se¼ of CCSD&RGNG sur 13, on 160-ac lse, 2½ mi w Lopez fld, Superior farmout, elev 583, grn, dk. O. W. Killam's Puig 1, 160-ac lse, Brown O&G subd, Las Albercas gr, 10 mi s Mirando City, elev 896 grn, Killam rig, lcn.

Zapata County—Dulup Oil Co.'s Haynes 2, sec 18, Haynes subd, 1120-ac lse, 15 mi s Escobas, elev 392.6 ft, 1200-ft test, dr 1055 ft.

COMPLETIONS

Atascosa County — Henderson Coquat's Beshears 1, 60-ac tr, 6 mi n Campbellton, Wilcox 4030 ft, abnd 5820 ft.

Bastrop County—Marts & Beaven, Inc.'s Dougherty 1, 77½-ac tr, Geo. Glasscock 4 mi e Elgin, Edwards 3290 ft, abnd 3310 ft. Mossert & Dixon's Lentz, 300-ac tr, J. Lentz sur, 3 mi n Bastrop, abnd 2327 ft, slight oil show.

Live Oak County—Brauer, Beacham & West's Atkinson 1, 80-ac lse, Louis Ayers sur, 2½ mi ne Callihan fld, abnd 913½ ft.

Nueces County—Seaboard Oil Corp. of Del.'s Luby 9, blk 2, Mary J. Luby subd, on 531.74-ac tr, flowed 150 bbls 5/64-in ch, 850 lbs tp, 950 lbs cp, perf 7310-12 ft, td 7311 ft, new sand for Luby fld. (owdd from 5068 ft).

WEST TEXAS

FIRST REPORTS

Fisher County—Al Landers & H. J. Eisele's Newman 1, sec nw T&P sec 8, blk 20, rur.

Menard County—W. F. Sorrells et al's Wilkerson 1, nwc C. A. Zimmerman sur 1549, A-827, spd on 4000-ft test.

Pecos County—Stanolind's Conry-Davis Unit 1, center lot 8 and swc H&GN sec 31, blk 9, mim.

COMPLETION

Pecos County—S. D. Pattillo et al's Hoffman 1, sec nw T&StL sec 6, blk 141, abnd 1390 ft.

WEST CENTRAL TEXAS

COMPLETIONS

Brown County—Johnson-Richburg & Mannon's Charter 2, nw nw BBB&C sec 20, abnd 404 ft.

Eastland County—W. M. Morris et al's Bryant 1, nw sw se H&TC sec 20, blk 1, abnd 925 ft.

Jones County—Shaheen Oil Co.'s Young 1, nec of 120-ac lse, S. Andrews sur 191, jkd 1650 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—Geo. Keith Jr. et al's Prideaux 1, se sw TE&L sec 1867, lcn 900-ft test. Magnolia's Hayter 1, sec e½ TE&L sec 2415, 3½ mi se Megargel, dr for Ordovician test.

Cook County—Bridwell Oil Co.'s Fisher 1-A, nw se lot 11, John Barnett sur 42, lcn 2100-ft test.

Throckmorton County—Rathke Oil Co.'s Swaggerty 1, ne sw BBB&C sec 258, rig for 5300-ft test.

Young County—Holbrook & Woods' Pigg 1, R. Wilson sur, dr 265 ft.

COMPLETIONS

Baylor County—L. T. Burns' Fee 1, sec ne T&NO sec 73, A-320, trace oil 1334-48 and 1830-40 ft, abnd in Strawn (dry) 4654-4775 ft.

Clay County—Claude E. Riley et al's Reid 1, sw sw blk 141, Byers subd, abnd 1511 ft.

Denton County—Amon G. Carter et al's Allen 1, nwc of Stephen Westbrook sur, A-1337, Bend 7650 ft, Viola 8125 ft, Simpson 8200 ft, Ellenburger 8780 ft, abnd 9025 ft.

Jack County—Rathke Oil Co.-R. C. Parker's Mosely 1, most e/ne cor John Harrison sur, A-259, Bend 4460 ft, td 5347 ft, pb and shot 70 qts nitro 4498-4510 ft, 2,250,000 ft gas.

Wichita County—Big Six Oil Co.'s Edmonson 1, nwc sec 13, Red River Valley sur, abnd 1820 ft.

Wilbarger County—C. H. Kadane & J. N. Fidel (was Big Six Oil Co.'s) Morris 1, sec H&TC sec 3, blk 14, pumped 140 bbls oil & one bbl water, Cisco sand 2895-2905 ft.

Young County—Rhea Anderson et al, Multinax 1, sw sw nw TE&L sec 168, abnd 1001 ft. Brazelton Bros.' Ferguson 1, S. Tynes sur A-274, abnd 455 ft. B. C. Gilmore et al's Bagley 1-C, se part L. W. Ross sur, abnd 580 ft. M. R. Stipe et al's Bloodworth 1, nwc s½ se TE&L sec 194, abnd 1156 ft.

EAST TEXAS

FIRST REPORTS

Leon County—H. A. Lindsay et al's White 1, west cor 160-ac lse, McKinney-Williams sur, 1 mi se Buffalo, lcn.

Smith County—R. L. Moore et al's Browning 1, nwc 177-ac tr, G. Chisum sur, 3 mi sw Garden Valley, rig.

COMPLETION

Limestone County—Gulf & Farrell Dr. Co.'s Bevill 1, north cor 114-ac lse, J. H. Murray sur, 1 mi sw Horn Hill, elev 506 ft, Austin chalk 2052-2404 ft, Buda 2872 ft, Georgetown 3015 ft, First Glen Rose 3768 ft, anhydrite 4295-4305 ft, Pettit 4737 ft, Travis Peak sand 4892-4940 ft, abnd 5520 ft.

TEXAS GULF COAST

FIRST REPORTS

Liberty County—Dishman & Lucas Robertson 1, De La Garza sur, Tanners Bayou area, lcn 7500-ft Cockfield test.

Matagorda County—J. Nye Ryman's Texas Gulf Sulphur Co. 1, L. Ingram sur, 5 mi ne Matagorda, lcn 850-ft test.

COMPLETIONS

Brazoria County—J. Newton Rayzor's Christian 1, Wm. Parker sur, disc Chenango fld, flwg 453 bbl 34-gr oil, 150 bbl salt water daily via ¼-in ch from 8566-74 ft Frio, tbg/csg pressure 865/1200 lbs. Humble's Hubbard 3, n outpost Rowan fld, new gas sd 9090-105 ft, no gauge, tbg press 3100 lbs.

Grimes County—R. A. Irwin & A. G. Muench's Schoenfeld 1, West Magnolia pros, R. O. Lusk sur, Wilcox 7665 ft, sw in all Wilcox sds. temp. abnd 8206 ft, may deepen.

San Jacinto County—McDannald Oil Co.'s U.S.A.-Foster 1, Taylor sur, Cold Spring pros, all Wilcox sds carried sw, abnd 8000 ft.

Wyoming

FIRST REPORT

Natrona County—K. S. Albert's Young 1, ne se 25-32n-82w, Iba Dome, loc.

COMPLETIONS

Crook County—Continental Oil and Vickers Pet. Corp.'s Duncan-Lobban 1, c nw sw 28-57n-64w, Government Canyon, abnd 2476 ft.

Platte County—Dividend O. & Ref. Co.'s Johnson 1, csl nw sw 17-24n-66w, Antelope Anticline, abnd mech. dif. 3814 ft, in Sundance.

LaBelle Field Rules

Twenty-acre spacing for wells producing from sands above 7500 feet in the LaBelle field, Jefferson County, is provided in a Texas Railroad Commission order. Wells are to be located 467 feet from lease lines, and at least 933 feet apart.

Proration is on acreage and per-well, with 75 percent of allowable to be distributed on the acreage basis.

Rules provide for 80 feet of conductor pipe comented to the surface, 1800 feet of surface casing cemented to the surface, and an oil string cemented 500 feet above the shoe.

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MEN IN THE INDUSTRY'S NEWS

HUGH ROY CULLEN, Houston operator, has been selected as guest of honor for the fourth annual oil men's jubilee of the South Texas Chamber of Commerce, to be held in San Antonio March 21. Al Buchanan, San Antonio, who was honored at last year's jubilee, is general chairman of the event.

Cullen entered the oil business in 1917, and the following year acquired rights on about 1,000,000 acres on the Edwards Plateau and promoted the first three wells drilled in West Texas. In subsequent years, he and his associates discovered oil fields in various sections of South Texas, including Pierce Junction, Blue Ridge, Thompsons and Tomoconnor. His recent discovery of the Washburn Ranch field, LaSalle County, created one of the most intensive leasing plays for Wilcox production in South Texas history. In 1939, he and Mrs. Cullen gave to the University of Houston the Roy Gustav Cullen Memorial building, in honor of their son.

MAX E. FERRELL and Wade W. Turbull, The Carter Oil Company, have been temporarily transferred from the field to the Tulsa geological division.

L. C. RHOADS, sales engineer for Hercules Tool Company, has been transferred from the company's southern office to the home office in Tulsa and named general sales representative. Rhoads was formerly district manager at Fort Worth.

DR. GUSTAV EGLOFF, research director for Universal Oil Products Company, Chicago, and Dr. B. B. Weatherby, head of geophysical department, Amerada Petroleum Corporation, will again serve as co-chairmen of the scientific committee for the 1942 International Petroleum Exposition.

WALLACE G. CORWIN, vice president of Colombian Petroleum Company and SOGAC Pipe Line Company, is due back in New York shortly from a trip to Colombia.

DAVID FRAME, general superintendent of production for Humble Oil & Refining Company, Houston, has been named a director of the company. Employed in the banking business at the start of World War I, Frame enlisted in the army and entered the First Officers' Training Camp at Leon Springs, Texas. He was assigned to the Nineteenth Division as second lieutenant, and when the division was ordered overseas for active duty he was commissioned a captain in the artillery. He moved into Germany with his division after the Armistice as part of the Army of Occupation. On returning to the United States in 1919, he joined Humble Oil & Refining Company as a scout, was made division land man at Wichita Falls in 1923, and in 1926 was promoted to superintendent of the Amarillo division of the production department. He was transferred to the Houston office as general superintendent of production in 1930.

GUY WELLMAN, general counsel of Standard Oil Company (New Jersey), retired last week under provisions of the company's annuity plan. He conducted legal affairs connected with the company's reparation claims against Germany following World War I, and was prominent in negotiations leading to formation of Iraq Petroleum Company.

WILLIAM J. CUSHMAN, formerly in the warehouse department of Colombian Petroleum Company at Cucuta, who has been in the United States for several weeks on vacation, has returned to South America as an employe of the warehouse department of The Texas Company in Venezuela.

T. M. JOHNSTON, service manager for M. O. Johnston Oil Field Service Corporation, Los Angeles, is on a business trip to South America. He expects to be gone several months, visiting Trinidad, Venezuela and Colombia. He has been associated with the company for the past seven years in a service capacity.

SAM E. ROGERS, foreign representative of Petty Geophysical & Engineering Company, San Antonio, will give a Travelogue before Houston Geological Society February 20, at the Texas State Hotel. He will show motion pictures taken in many parts of the world.

PERCY JENKINS, with Wickwire Spencer Steel Company for more than 15 years, has been appointed manager of the Boston branch of John A. Roebling's Sons Company.

MATTHEW B. SWEENEY, 69, executive officer in charge of Sun Oil Company's Dallas divisional office and active in the pipe line and production branches of the oil industry for nearly a half century, died February 12 in a Dallas hospital. He had been ill at intervals the past two years. Born at Wellsville, New York, he began work upon completion of high school education in the nearby Allentown oil field with the National Transit Pipe Line Company. He entered the service of Sun Oil Company in May, 1896, as a field worker in Ohio, and at the time of his death was its third oldest employe. The discovery of oil at Spindletop resulted in his transfer to Texas as production superintendent in 1901, and in 1913 he was promoted to general manager of Coastal operations with headquarters at Beaumont. Due to company operations shifting to West Central and North Texas, he was transferred to Dallas in 1920.

HINES H. BAKER, in charge of refining and sales for Humble Oil & Refining Company, Houston, last week was made a vice president. A director of the company since March, 1937, Baker received a law degree from the University of Texas in 1917, served in World War I, as a lieutenant. Following the war, he opened a law office in Beaumont, and a year later became affiliated with the legal department of the company. He was placed in charge of the company's refining and sales departments late last year following the death of Stuart A. Giraud.

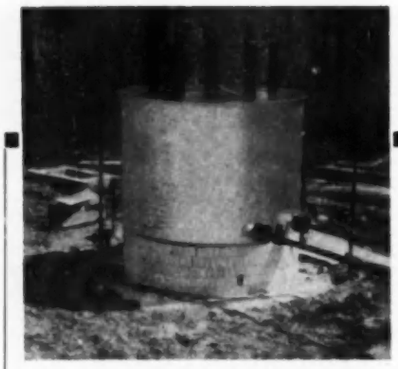
FRANK LINDEMAN, JR., engineer for Stanolind Oil & Gas Company, Tulsa, led off a panel discussion on "Gas Recycling and Distillate Recovery" before the Mid-Continent Section of the American Institute of Mining & Metallurgical Engineers last week at Tulsa. He discussed "Preliminary Investigation of the Project." Others who took part, and their subjects, were W. B. Berwald, The Ohio Oil Company, "Organization and Selection of Equipment," and D. K. Hutchcraft, Clark Brothers, Inc., "Engines and Compressors."

J. LEONARD DAVIDSON, Houston geophysicist whose hobby is collecting wild animals and presenting them to the Houston zoo, has been named vice chairman of a group of citizens serving as a fact finding committee to investigate the forming of a Houston Zoological Society. Davidson recently headed a delegation that called upon Houston's mayor to request formation of such a society.

J. D. WRATHER, JR., Mazie Wrather and A. A. Garrett have organized New Jersey Oil Corporation as a Texas company with headquarters at Overton.

DR. SHERMAN LESESNE, chemical professor at Oklahoma City University, and Allen Bronston, National Soil Laboratories, Oklahoma City, discussed "Advances in Interpretation of Soil Analyses" before the Oklahoma City Geological Society last week.

DAVID B. HARRIS, manager of industrial relations for Humble Oil & Refining Company, Houston, last week was added to the company's board of directors. He received a B. S. degree in civil engineering from A. & M. College of Texas in 1909, and on graduation accepted employment with the South Texas Commercial National Bank, Houston. He spent two years in the Army during World War I, eight months with the



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TRAILERS

MEN IN THE INDUSTRY'S NEWS

American Expeditionary Force, and was mustered out of service with the rank of captain. He joined Humble Oil & Refining Company in a labor gang at Ranger in May, 1919, was advanced to division superintendent of the Louisiana-Arkansas division, and successively was superintendent of Gulf Coast, East Texas and Southwest Texas divisions. He was appointed manager of industrial relations in June, 1934.

JEROME S. SMISER, associated since May, 1935, with Salt Dome Oil Corporation as geologist, paleontologist and chief petroleum engineer, has opened an office as consulting geologist at 513 Oil & Gas Building, Houston. He received a M.S. degree in geology from Texas Christian University in 1929, and a Ph.D. from Princeton University in 1931. During this period he had short part-time associations with Sinclair Exploration Company, assisting in paleontological work, and with The Pure Oil Company, doing surface geology in Wyoming. He was instructor in the geological department of Princeton University until 1934, when he was granted a leave of absence for a year as an advanced research fellow with the C. R. B. Educational Foundation. After a year spent in England, Scotland, Belgium, Holland, France, Germany and Switzerland, he resigned from Princeton University to join Salt Dome Oil Corporation.

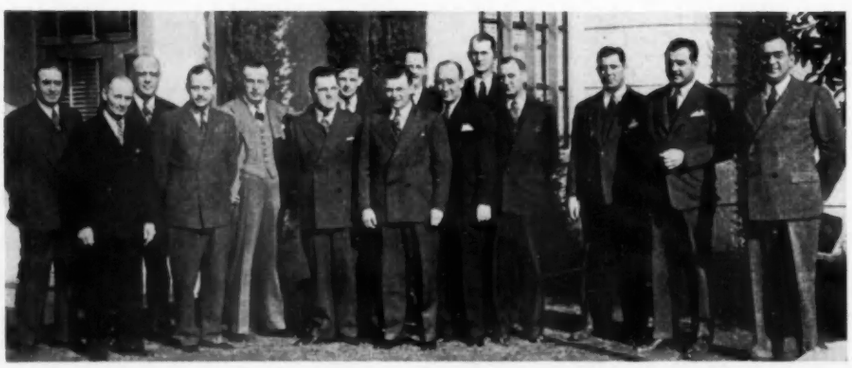
ED. A. LANDRETH, president of Landreth Production Corporation and a Fort Worth civic leader, has been honored by the Fort Worth Exchange Club as the outstanding citizen in 1940. Formal award will occur at a banquet to be held March 29.

R. H. McLEMORE, Sun Oil Company engineer, has been elected president of the newly organized Petroleum Engineers Club of Dallas, which will hold weekly "get acquainted" noon luncheons and a monthly night meeting with program. S. S. Parker, National Tank Company, is vice president, and Ed Peters, of Frank & Fred Jones Drilling Company, is secretary-treasurer. R. E. Landis, National Supply Company, is vice president in charge of entertainment, and W. W. Scott, Atlantic Refining Company, vice president in charge of membership.

L. O. KELSEY, Republic Natural Gas Company, and Phil Martyn and Charles Sample, Houston Oil Company of Texas, will address the South Texas Geological Society meeting, February 21 in the Nueces Hotel, Corpus Christi. Kelsey's subject will be "Structure of White Point and East White Point Fields," and Martyn and Sample will jointly discuss "Oligocene Stratigraphy of East White Point Field." At the meeting, nominations will be made for election of South Texas district representative to succeed C. C. Miller, Corpus Christi.

W. H. WIGINTON, Atlantic Refining Company, will discuss "Present Trends and Success of Plug-Back Work, East Texas Field," and Paul D. Cornelium, Kobe, Inc., will deliver a paper on "Application of Hydraulic Oil Well Pumping to the East Texas Field" before the East Texas Chapter of the American Petroleum Institute's Division of Production, meeting at Kilgore February 18.

B. A. MYERS, of International Petroleum Company, Toronto, Canada, is in Colombia. He will return to Canada in March.



Lane-Wells Company recently held its annual sales convention in Los Angeles. Attending the meeting, pictured above from left to right, were Walter T. Wells, board chairman; G. F. Turchek, mechanical research engineer; D. S. Jeppson, controller; J. W. McPhee, California division manager; Rodney S. Durkee, president; M. E. Montrose, vice president and general sales manager; Chas. H. Barnes, production engineer; E. R. Smith, sales engineer; D. M. Anderson, California division sales manager; M. L. Dorn, vice president and chief engineer; J. Murray Walker, Canadian division manager; J. E. Huff, Jr., acting Gulf Coast sales manager; R. B. McCullar, Mid-Continent division manager; Charles T. Casebeer, Mid-Continent division sales manager, and M. T. Higgs, Gulf Coast division manager.

HENRY K. ARNOLD, assistant to the vice president in charge of production for Humble Oil & Refining Company, Houston, last week was named secretary and assistant treasurer, succeeding the late J. S. Crate. Arnold entered the oil business in 1913 as secretary to the division superintendent of Producers Oil Company, Wichita Falls, transferring to Houston in 1916. He joined Humble Oil & Refining Company in 1918 as secretary to W. S. Farish, then company president.

R. W. BLACK, chief safety engineer for Standard Oil Company (New Jersey), Elizabeth, New Jersey, has been appointed chairman of the American Petroleum Institute's Central Committee on Accident Prevention for 1941. He succeeds J. Howard Myers, The Atlantic Refining Company, Philadelphia. Members of the committee, as appointed by Executive Vice President W. R. Boyd, Jr., are:

D. A. Bering, Shell Oil Company, San Francisco; J. C. Bernd, Sinclair Refining Company, East Chicago, Indiana; H. W. Boggess, Sinclair Prairie Oil Company, Tulsa; J. S. Boylan, Continental Oil Company, Ponca City; A. W. Breeland, Lone Star Gas Company, Dallas; J. H. Brown, Tide Water Associated Oil Company, New York; Glen Byers, Shell Oil Company, Houston; S. W. Candee, Tide Water Associated Oil Company, New York; Alex S. Chamberlain, Ashland Oil & Refining Company, Ashland, Kentucky; Lee B. Conner, The Texas Company, Houston; J. H. Cuthrell, Humble Oil & Refining Company, Houston, and C. W. Coleman, Gulf Oil Corporation, Port Arthur, Texas.

Also, R. J. Daugherty, Cities Service Oil Company, Bartlesville; R. E. Donovan, Standard Oil Company of California, San Francisco; H. S. Elkins, National Petroleum Association, Washington; O. H. Gundlach, Sinclair Refining Company, New York; R. G. Guthrie, Sun Oil Company, Philadelphia; John Hammerman, Jr., Gulf Oil Corporation, Houston; Frank Harrison, The Pure Oil Company, Chicago, W. V. Hartmann, Gulf Oil Corporation, Pittsburgh; R. T. Henderson, Standard Oil Company (Ohio), Cleveland; J. E. Heston, Petroleum Advisers, Inc., New York; C. L. Hightower, United Gas Pipe Line Company, Shreveport, and J. M. Ivy, Standard Oil Company of Louisiana, Shreveport.

Also, H. W. Jackson, Kendall Refining Company, Bradford, Pennsylvania; J. H. Kelley, The Atlantic Refining Company, Dallas; W. I. Kent, Magnolia Petroleum Company, Dallas; L. F. Knox, General Petroleum Corporation of California, Los Angeles; Oscar B. Lewis, Ethyl Gasoline Corporation, New York; W. F. Lowe, Natural Gasoline Association of America, Tulsa; T. S. Maffitt, Jr., Houston Oil Company of Texas, Houston; J. L. Manes, Sun Oil Company, Dallas; H. T. Markee, Phillips Petroleum Company, Bartlesville; A. J. Martinson, California Petroleum Safety Board, Inc., Los Angeles; J. D. McCamey, The Carter Oil Company, Tulsa; M. C. McDowell, Rio Bravo Oil Company, Houston, and

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MEN IN THE INDUSTRY'S NEWS

The International Derrick & Equipment Company recently held a national sales meeting at Beaumont. Those attending the meeting are pictured above. In the first row are W. S. Nelson, Odessa, Texas; Gordon Wilbur, Olney, Illinois; F. E. Suder, Wichita; L. G. Davenport, Kilgore; A. R. McLerran, Beaumont; R. E. Sanford, Corpus Christi, and C. H. Engelmohr, Beaumont. In the second row are E. H. Jensen, Kilgore; F. Quaidy, Houston; Van Rogers, Madill, Oklahoma; W. O. Cook, Beaumont; G. E. Shoup, Fort Worth; R. E. Miller, Grayville, Illinois; George Ford, Beaumont, and R. D. Ekstrand, Tulsa. In the third row are R. R. Matthews, Great Bend, Kansas; C. H. Williams, Salem, Illinois; F. J. Ackman, Shreveport; E. H. Eddleman, general sales manager, Dallas; C. G. Booker, Houston; Jack Colby, Corpus Christi; J. M. Aitken, Columbus, Ohio; C. M. Powell, Tulsa, and R. A. LaFleur, Beaumont. In the fourth row are D. C. Davis, Fort Worth; C. A. McClelland, Dallas; R. E. Dowell, Pampa, Texas; C. R. Athy, chief engineer, Columbus; W. H. Cumberland, treasurer, Beaumont; W. M. Marks, Beaumont; O. M. Havekotte, chairman of the board, Columbus; R. R. Bloss, president, Beaumont; M. T. McGriff, Shreveport, and L. R. Spencer, Houston.

A. M. McKean, Pan American Petroleum & Transport Company, New York.

Also, F. R. McLean, Socony-Vacuum Oil Company, Detroit; R. W. Metcalf, Signal Oil & Gas Company, Los Angeles; E. D. Murphey, Mid-Continent Petroleum Corporation, Tulsa; J. Howard Myers, The Atlantic Refining Company, Philadelphia; A. A. Nichoson, The Texas Company, New York; A. A. Odell, Barnsdall Oil Company, Tulsa; George F. Prussing, Union Oil Company of California, Los Angeles; W. P. Reymond, Jr., Standard Oil Company of Louisiana, Baton Rouge; J. L. Risinger, Socony-Vacuum Oil Company, New York; R. B. Roaper, Humble Oil & Refining Company, Houston; S. D. Saltonstall, Lion Oil Refining Company, El Dorado, Arkansas, and C. W. Smith, Standard Oil Company (Indiana), Chicago.

Also, J. P. Sutton, The Ohio Oil Company, Findlay; C. L. Swim, Skelly Oil Company, Tulsa; A. H. Vineyard, Shell Oil Company, New York; C. R. Weidner, Sinclair Refining Company, Independence, Kansas; Frank Werner, Republic Production Company, Houston; H. J. Wilson, Tide Water Associated Oil Company, San Francisco, and M. K. Youker, Phillips Petroleum Company, Bartlesville.

JAMES A. MURPHEY, 66, West Central Texas operator, died February 10 at Mineral Wells, Texas.

DR. B. A. LILENBORG, geologist and petroleum engineer, is opening an Illinois Basin field office for National Petroleum Company and Southwestern Royalty Company, Tulsa, at Evansville, Indiana. His assistants are T. R. Lindsay, H. J. Aspin and Guy Moore.

ROY JENKINS, 67, president of Jenkins Oil Corporation and Washington Oil Corporation, died February 7 of a stroke at his residence in Dallas. He entered the East Texas field at the beginning of production.

G. A. PALMER, southwestern representative for the De La Vergne Engine Sales Division of Baldwin - Southwark Corporation, Philadelphia, with headquarters in Houston, died February 9. Palmer, who had been suffering from heart trouble for the past two or three years, had been located in Houston for 24 years as sales representative for De La Vergne engines. He had recently been given the added appointment as southwestern representative for The Midvale Company, Nicetown, Pennsylvania.

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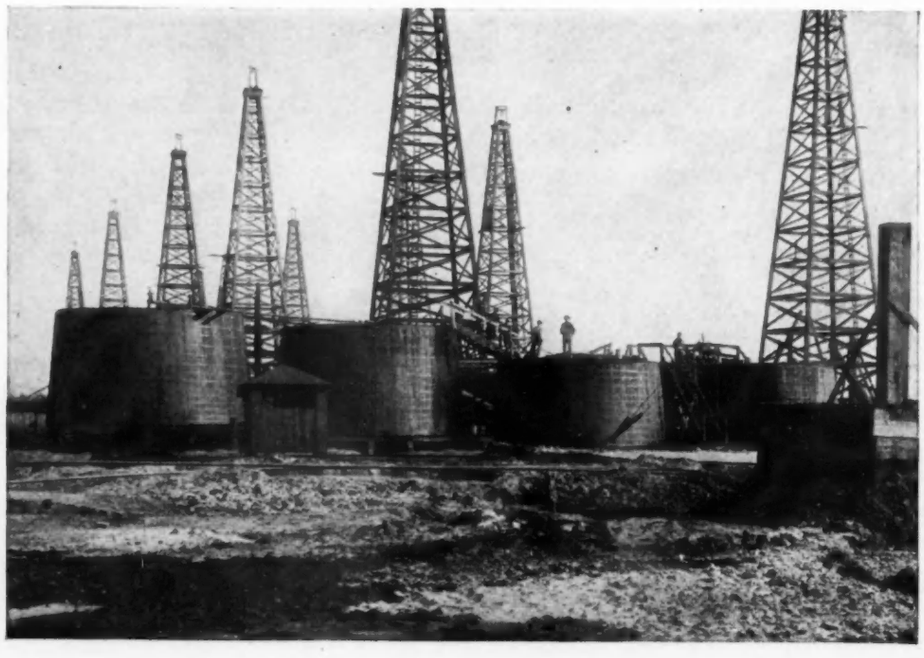


Oil settling tank, West Columbia oil field, 1919.

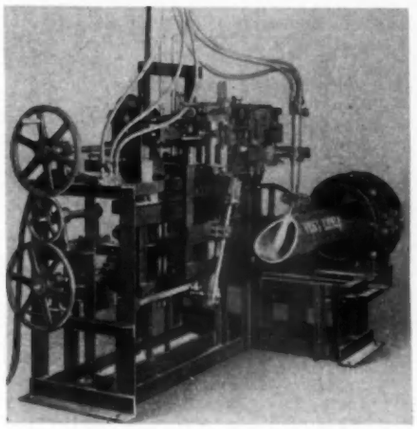
NOTES FOR THE Equipment Buyer and User

Pipe Cutter

SPENCE ENGINEERING COMPANY

A machine designed to cut any size pipe to fit any pipe of the same size, or larger, at any angle or any offset, has been announced by Spence Engineering Company, Walden, New York.

Adjustments are made by four dials,



Spence Engineering's Pipe Cutter

and the cutting is accomplished by a standard cutting torch. The machine is hand operated, as the compound motion changes the cutting speed to an extent that the operator must gauge the speed to match the torch's ability to cut. The chuck has a set of adapters for each size of pipe.

An attachment is available to cut the corresponding holes in the other pipe.

Welding Positioners

Cullen-Friestedt Company, 1300 South Kilbourn Avenue, Chicago, has issued Bulletin WP-20 describing its line of welding positioners. Units illustrated and described have capacity ratings from 1200 to 14,000 pounds. Complete specifications are given, and illustrations show positioners in use.

Swivel

THE INTERNATIONAL DERRICK & EQUIPMENT COMPANY

An 8-inch swivel, employing pressure lubrication with automatically induced circulation to guard against overheating, has been announced by The International Derrick & Equipment Company, Beaumont, Texas.

Wash pipe of the swivel is a case-hardened alloy-steel forging, with a tapered fit to provide a tight seal between wash pipe and goose neck. Lower stem packing for sealing off oil between stem and body can be replaced without removing lower coupling. Piston ring and labyrinth seal type packings are used for the upper stem.

Stem is a one-piece chrome-nickel steel forging. Bushings pressed on the stem at point of contact with the oil seals are designed to prevent direct wear on the stem. The stem, together with radial-bearing inner races, thrust-bearing upper plate and the protective bushings can be removed for inspection or replacement from top to cover and without necessity of removing the lower coupling.

Fluid passage through goose neck, wash pipe, stem and lower coupling is the same size throughout its length. Opening is the same size as in the standard kelly, so designed that a constant flow may be obtained and no back pressures encountered.

The goose neck is a steel casting designed for minimum fluid turbulence with a 4-inch API female hose connection and an API outlet angle.

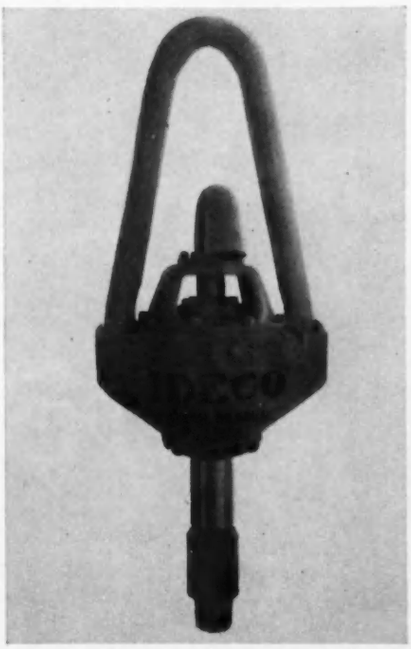
Packings

THE B. F. GOODRICH COMPANY

Two types of sheet packing, one made of Ameripol, synthetic rubber developed after 14 years of research, and the other of Koroseal, synthetic elastic material, have been announced by The B. F. Goodrich Company, Akron, Ohio.

The Ameripol product is a dark packing designed to resist action of oils, heat and cold, and to resist water absorption. Tensile strength is approximately 1500 pounds, elongation 400 percent, and Shore durometer hardness 78 to 92. It is made to order only in 100-pound rolls, approximately 36 inches wide in thickness from 1/32- to 1/4-inch. A square yard of the 1/16-inch size weighs approximately 4¾ pounds.

Koroseal packing is designed to resist action of oils and solvents, and of some corrosives. Tensile strength is about 2200 pounds, elongation 300 percent, and Shore durometer hardness 73 to 77. It is furnished in 26 x 36-inch sheets.



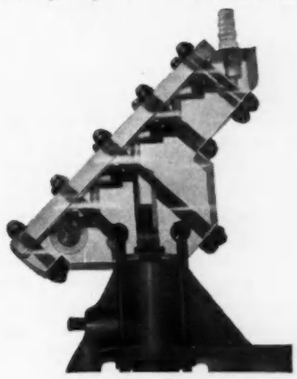
Ideco's 8-Inch Swivel

Plastic Pump

MILTON ROY

A transparent plastic pump for handling dilute acids, hypochlorites and other chemicals has been announced by Milton Roy, 1325 East Mermaid Avenue, Philadelphia.

The pump is machined from a solid



Milton Roy Plastic Pump

block of plastic material, and features visibility at all times of the flow of liquid being pumped and the movement of the valve checks and pump piston. The plastic provides a natural resistance to chemical attack.

The pump features a flat-plate cover which, when removed, permits cleaning the complete valve assembly without disturbing pipe connections to the pump. Units are available in capacities of from ½ to 20 gallons per hour.

Condenser Cleaning

Proportioneers, Inc., Providence, Rhode Island, has issued a bulletin describing its method of applying the Chloramine process for slime control in condenser and cooling water systems. The process is designed to maintain the efficiency of a cooling system at a high level. The bulletin includes an illustration of the equipment and gives installation drawings.

Motor

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

A line of open-type sleeve-bearing squirrel-cage induction motors, designed for general purpose drive applications, have been announced by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania.

Designated Type CS, they are available in ratings from ½- to 5-horsepower, at speeds from 875 to 3600 revolutions per minute, for operation on 110, 220, 440 and 550 volts, 2- and 3-phase AC.

Rigid complete-cast frames are designed to maintain constant air-gap between stator and rotor. Frame improvements include sealed sleeve bearings with a combination vestibule and felt washer seal, and a larger oil reservoir capacity. Oil filter cups may be inserted on either side of the motor.

Wire insulation is designed to give maximum dielectric strength, toughness and flexibility. Combination slot cells

Elastic Stop SELF-LOCKING **NUTS**

THE nuts with the resilient non-metallic locking collar ...many types...all sizes ...all thread systems... any material.

● *See our exhibit at the Tulsa Show*

ELASTIC STOP NUT CORPORATION
1001G Newark Ave. • Elizabeth, New Jersey

The Lane-Wells Company has openings for several men in the Field Service Department. Prefer married men over twenty-five who are graduate petroleum or electrical engineers and who have had oil field experience.

Also have openings for sales engineers. Same qualifications as above plus ability and personality to sell technical services to oil company field men, engineers, and executives.

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CALL WOODCREST 6-2679
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GULF COAST PETROLEUM LABORATORY, Inc.
1215 DUMBLE ST. HOUSTON

NOTES FOR THE Equipment Buyer and User

with reinforced cuffs are provided to protect windings from abrasion, and coil ends are taped for reinforcement against strains of full voltage starting.

Appearance has been improved by elimination of sharp corners and projections to give a rounded contour. Castings are buffed to produce a smooth, even surface. Finish is a light machine-tool gray.

Revere Copper & Brass Announces Defense Award

Revere Copper & Brass Incorporated, 230 Park Avenue, New York, has announced the Revere Award, to consist of nine cash prizes totaling $10,000 to be given American workmen in the metal industry for suggestions that will do most to accelerate the country's industrial defense program.

A 20-page booklet has been issued describing the award, giving a list of prizes, stating who may enter, and explaining for what it will be given. Five judges have been chosen, representing science, labor, industry, and the Army and Navy.

Steel Tube Institute Launches Research Program

The Seamless Steel Tube Institute, 3510 Gulf Building, Pittsburgh, has announced adoption of a program of market research and related activities, to be put into effect March 1 under the direction of W. A. Cather, now advertising manager of The Babcock & Wilcox Company, 85 Liberty Street, New York.

In his new position, Cather will operate out of the institute's office in Pittsburgh and the offices of te Michel-Cather organization at 2 Park Avenue, New York.

Houston Nomads Chapter Elects Five New Members

Five new members were elected by the Houston Chapter of Nomads at the group's regular monthly meeting February 10. They are E. B. Wood, Wyatt Metal & Boiler Works; J.L. Mathieu, Schlumberger Well Surveying Corporation; C. B. McDonald, A-1 Bit & Tool Company; H. W. Millmine, Texas Rubber & Specialty Corporation, and A. Henderson, McEvoy Company.

J. L. Mathieu, of Schlumberger Well Surveying Corporation was the principal speaker at the meeting, which was presided over by Frank Champion, Byron Jackson Company, recently elected president of the chapter.

Guests included J. O. McPherson, Sun Oil Company; E. C. Lawry, Shell Oil Company; J. C. Ballagh, Patterson-Ballagh Corporation; Earl Daniels, Hydril Company; Mont Land, Tretolite Company, and Thos. T. C. Storey, C. J. McLaren, Gus S. Meyer, P. J. Lea, S. P. Chambless, all of Hughes Tool Company.

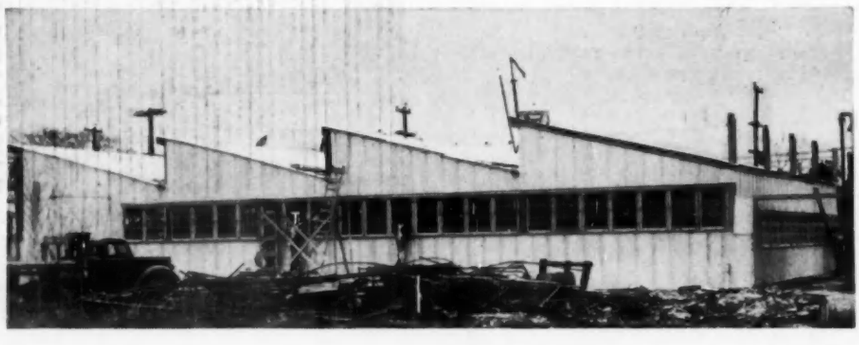
Arcos Corporation Doubles Stainless Electrode Capacity

Arcos Corporation, Philadelphia, has announced an addition to its stainless electrode manufacturing plant which will give it approximately 100 percent increase in capacity. The new units have been in partial operation since mid-January, and will be completed by mid-February.

Coating

American Concrete & Steel Pipe Company, Terminal Annex, Los Angeles, has issued a catalog, "Amercoat Plastic Coatings," describing a sprayable plastic coating described as corrosion-proof and non-contaminating.

McEvoy Company, which suffered a major loss by fire recently, substantially rebuilt its Houston plant in 12 days and added 2500 square feet of space. Officials report all deliveries were made on schedule despite inconvenience caused by fire, and that there was no interruption in receipt of orders during the rebuilding process. An interior view of the plant immediately after the fire is shown at the left, and an exterior view taken 12 days after the fire is shown above.



Squeaks from the Bull Wheel

Strong Motive

"Now," said the young lawyer making his court debut as he questioned the defendant, "you say you came from Sarasota to Mobile merely to look for work? I put it to you that there was another stronger motive that brought you all this distance."

"Well," hesitated the defendant, "there was—"

"Ah," cried the young barrister triumphantly. "And what was it?"

"A locomotive."

Quiet

"Well, what do you think of our little city?"

"I'll tell you, brother, this is the first cemetery I ever saw with lights."

Wrong Pew

The preacher's sermon had lasted nearly two hours. Deacon Beggs, who was seated near the rear of the chapel, had dozed off to sleep. The minister ended his sermon with the following words: "We will close with a short prayer. Deacon Beggs will lead."

The deacon awoke with a start and replied, "It ain't my lead, I just dealt."

Patriotic Gesture

"So you traded in your old car at last."

"Yes, I'm not one to hold back on our defense program when the government needs scrap iron."

No Encouragement

"Why must a judge look so impassive?"

"If you show any signs of interest in a lawyer's argument he'll never stop."

Obeyed Mama

Why did you let him kiss you?

Well, he was so nice about it. He asked very politely.

The idea! Haven't I always tried to teach you to say no?

That's what I did say. He asked me if I'd be very angry if he kissed me.

Kid Stuff

"This is the fifth time I have punished you this week. What have you to say?"

"I'm glad it's Friday."

And Feet

Mrs. Jones called up to say she couldn't meet you downtown this morning.

Well, that's a wait off my mind.

Quiver, Quiver

"I'm a great lover of ghost stories."

"So'm I, pal. Let's shake."

Definite Debate

I asked if I could see her home."

'And what did she say?"

'She said she'd send me a photo of it."

Correction

Barber—Your hair needs cutting badly, sir.

Customer—I don't agree with you. It needs cutting nicely this time. You cut it badly the last time I was here.

Taciturnity

Once during the administration of President Taft, his youngest son, Charles, attended a party where he sat next to a girl who did not know his identity. This was all right with Charles, for he was an energetic, independent American boy who scorned to make capital of his father's high office.

"What is your name?" asked the girl.

"Charley," laconically replied her companion.

"Where do you live?"

"On Pennsylvania Avenue," answered Charley.

The girl determined upon one final effort to learn her partner's identity.

"What does your father do?" she asked.

"Oh," replied Charley casually, "he's a political officeholder here."

And that was that!

WPA

What do you work at, my man?

At intervals, madam.

Nazi Efficiency

"I want a dozen of your planes," he ordered; "they must be ready three nights from now."

"Impossible!" exclaimed the works manager.

"I command!" roared Goering. "The crews will be here at the time stated."

The time came, and so did the crews. German efficiency had triumphed; there were the planes. Without loss of time they set out for their target—England.

Over London the leading pilot pulled the bomb-release lever—and out dropped three of the factory's night shift.

It's Beautiful

Poet—"And does this glorious setting sun mean nothing to you?"

Farmer (mopping his brow—"It sure does; it means I can unhitch the hosses pretty soon and go home."

Time of Need

"I thought you never were going to play with that bad little boy next door."

Sonny—"I wasn't, but I lost my ball and he's still got his."

Try Mice

Psychologists say an hysterical girl is most efficiently soothed by a firm kiss.

How do you get them hysterical.

A Sample

"How is it he never takes you to the movies any more?"

"Well, one evening it rained and we sat in the parlor."

Long Wait

After they had finished eating, the waiter brought the bill to the two Scotchmen. The two sat and talked for a couple of hours. After the conversation failed, they merely smoked on in silence. At one o'clock in the morning, one of them got up and phoned to his wife, "Dinna wait up for me any longer, lass," he said, "it looks like a deadlock."

Briefed

"What did your father say when you smashed the new car?"

"Shall I leave out the swear words?"

"Yes, of course."

"He didn't say a word."

Not Diplomatic

"I'll never go anywhere again with you as long as I live."

"Why?"

"You asked Mrs. Smith how her husband was standing the heat, and he's been dead two months."

Gotkool
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& COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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KEEP PURE DRINKING WATER ALWAYS HANDY

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